

ACCRA TECHNICAL UNIVERSITY

RESEARCH REPORT

2016-2021

VOLUME 1



ACCRA TECHNICAL UNIVERSITY (ATU)
DIRECTORATE OF RESEARCH, INNOVATION, PUBLICATION AND TECHNOLOGY TRANSFER (DRIPTT)

ATU RESEARCH REPORT (2016-2021)

VOLUME 1, 2022

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FOREWORD



Prof. Samuel Nii Odai

BEng, MSc, PhD, FGhIE, FioD, FGA

This maiden edition of the Accra Technical University Research Report (2016-2021) highlights the diverse and rich work of some of our leading academics, scholars, researchers and young emerging scientists. The Report provides evidence of the contribution that ATU's applied research is making towards our collective and individual futures, and the multiple ways that committed researchers in ATU are succeeding in addressing the three objectives of research, namely: excellence, societal relevance and academic relevance.

The Report focuses on the Strategic Plan of ATU (2021 – 2025), the global agenda of Sustainable Development as stated in the UN Agenda 2030, the goals of Ghana's Centennial National Development Plan (Agenda 2057), the Agenda 2063 which is the blueprint and master plan for transforming Africa into the global powerhouse of the future and the Sustainable Development Goals (SDGs) in Ghana (SDG-Ghana, 2017). The SDGs, also known as the Global Goals, are a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030 (SDG-Ghana, 2017). As this report clearly shows, the SDGs in Ghana can be innovatively achieved by fostering economic growth, ensuring social inclusion and protecting the environment.

The ATU Research Report (2016 – 2021) highlights peculiar challenges faced by developing regions of the world and shows commitment to pursuing applied research that addresses complex societal problems. It also illustrates successes achieved in terms of our mandate, vision and mission.

Our faculty's research strategy is guided by global trends and adopts a multidisciplinary approach to addressing complex real-world problems. Thus, the Report turns the spotlight on the solution-driven multidisciplinary research that have been undertaken by researchers working in teams. The initiatives and achievements in this Report also highlight the increasing significance of networking and multi-stakeholder partnerships in driving impact-oriented applied research which is the second pillar of our strategic plan (2021 – 2025). Through the development of areas pertaining to research strength and actively building networks and partnerships in areas of societal relevance in order to influence maximum impact, ATU has vigorously pursued its commitment of using Engineering, Applied Sciences, Applied Arts, Business, Technology and Innovation for development,

and for the well-being of the environment, people and society.
The Directorate of Research, Innovation, Publication and Technology Transfer (DRIPTT) has been at the forefront of implementing ATU's Research Agenda, in line with the Strategic Plan (2020 – 2025). DRIPTT has also facilitated local, national and international partnerships with the view to consolidating multi-sectoral and cross-disciplinary initiatives between academia and industry. The profiles in this Research Report depict both the confluence and distinctness between different knowledge fields. This Research Report explicitly identifies partnerships and collaborations with industry and academia in our collective quest to undertake research that is socially relevant.

In February 2020, we launched the ATU Research and Innovation Fund (ARIF) with the core mandate of enhancing multidisciplinary, action-based research to contribute towards building the necessary technical and vocational capacity for the development of Ghana and Africa at large. The establishment of the fund was driven by the desire of the University to contribute to the reduction of poverty and the improvement of the livelihoods of the Ghanaian.

As the mandate of Technical Universities shows, academia and industry research do not exist in a vacuum. Rather, academic and industrial research complement each other in a holistic ecosystem which achieves results for the economy and society at large. Thus, the nature and scope of the research captured in this report are typical examples of this holistic approach. It is worthy of note that research funders, research organizations, policymakers and other key stakeholders have different roles to play in a research ecosystem. Consequently, emphasis on one type of research against another has the potential to create chaos. In relation to the perspective of technologies, useful commercial products and innovations in commercial practices, the Research and Development (R&D) focus of DRIPTT in ATU is to technologically transfer these perspectives to industry.

A careful look at this Research Report reveals that ATU researchers, academics and scholars are contributing enormously to applied research in four (4) functional impact areas: economic development, capital development, knowledge expansion and innovation, quality of life and societal well-being. On behalf of the University Governing Council and ATU Management, I commend and congratulate all our dedicated researchers and administrators whose scholarly endeavours continue to provide a spotlight for ATU on the global research map.

"In February 2020, we launched the ATU Research and Innovation Fund (ARIF) with the core mandate of enhancing multidisciplinary, action-based research to contribute towards building the necessary technical and vocational capacity for the development of Ghana and Africa at large.



MESSAGE FROM DIRECTOR OF DRIPTT

Prof. Nana Yaw Asabere

[BSc (CS), MSc (ICT), PhD (CST), MIEEE, MIEEE-CIS, MIIPGh, MALCS]

Globally, universities through wide-ranging research activities and capabilities, have a critical role to play in the provision of required knowledge as well as evidence-based solutions and innovations. Consequently, ATU as a Technical University in Ghana, has a unique position and role of providing innovative applied research. The establishment of the Directorate of Research, Innovation, Publication, and Technology Transfer (DRIPTT) in 2010 substantiated the commitment of ATU to transform society through innovative research outputs by academic staff. DRIPTT has introduced tremendous changes in the research landscape at ATU.

Almost all indicators of research excellence and impact have improved considerably during the past ten (10) years. This is evidenced by the increased number of international and national research contracts and consultancy, improved researcher productivity, and improved researcher impact and visibility. My immediate predecessor, Mr. Edwin Mends-Brew as well as former Directors of DRIPTT, namely: Dr. Henry Kwadwo Hackman, Prof. Edmund Ameko and Prof. Sylvester Achio, contributed immensely towards the realization of these goals. It is my intention to consolidate the gains that have been made so far, and broaden the frontiers of ATU's research, innovation, publication and technology transfer. Consequently, it is expected that these enhancements will position ATU as a stronghold of research excellence on the African continent and beyond.

The nature of academic research in Technical Universities is evolving. The foundation of the research ecosystem is formed through academic disciplines in terms of thematically bounded fields of study. With reference to the full spectrum of applied research, the five faculties in ATU demonstrate a substantial diversity of quantifiable areas of specialized research focus. Multiple fields in Engineering (Civil Engineering, Electrical/Electronic Engineering and Mechanical Engineering), Built Environment (Building Technology, Interior Design, and Upholstery Technology), Applied Sciences (Applied Mathematics, Computer Science, Statistics, Science Laboratory Technology, Medical Laboratory Technology), Applied Arts (Fashion Design, Textiles, Hospitality, Liberal Studies, Communication Technology), and Business (Accounting, Finance, Marketing, Procurement, Supply Chain, Management, Public Administration) represent particularly notable

and sizeable areas of comparative strength in ATU.
This first edition of ATU Research Report (2016-2021) features announcements on research grants/funds attracted i.e., ATU Research and Innovation Fund (ARIF) and external grants, research activities, research awards and achievements, research visibility and a summary of high-impact publications (Web of Science and Scopus) of academic staff in diverse disciplines. It is to be acknowledged that currently, the creation of new knowledge drives the development and growth of all nations. Consequently, universities will lose their ability to contribute to national development if their research outputs are not strategically driven towards development in a particular nation.

A total of eight (8) innovative projects (ongoing or completed) have been externally won/attracted by staff through research grants and funding from the UK, Germany, USA and Ghana during the period under review. Since the introduction/launch of ARIF in 2020 by the Vice-Chancellor, four (4) ARIF awards focusing on applied research in diverse fields in Engineering, Technology, Applied Sciences and Applied Arts have been granted in 2020, and seven (7) in 2021. Five (5) ARIF projects have been completed (two in ARIF 2020 and three in ARIF 2021), and the rest of the projects are currently ongoing.

In conclusion, ATU can do better in its national and international ranking if we focus on research development planning, strategic research communication, driving Pillar 2 in ATU's strategic plan (2021-2025) and international grants attraction. DRIPTT seeks to focus on Impact-Oriented Research and Innovation (Pillar 2) and collaborate with all staff of ATU in the coming years to promote the uptake and implementation of research advancements in ATU. Long Live ATU, Long Live Ghana.

> *"The nature of academic research in Technical Universities is evolving. The foundation of the research ecosystem is formed through academic disciplines in terms of thematically bounded fields of study.*



BRIEF HISTORY OF **ACCRA TECHNICAL UNIVERSITY (ATU)**

Established in 1949 as a Technical School and commissioned in 1957 as Accra Technical Institute, Accra Technical University then (Accra Technical Institute) became the first Technical University to be established. In 1963 the Institute assumed a new name as Accra Polytechnic under the directions of President Dr. Kwame Nkrumah to be a key driver of the country's industrialization process. Following the operationalization of the PNDC Law of 1992 (PNDC 321) in 1993/1994, the Polytechnic gained tertiary recognition.

The elevation provided that the University under the Higher Education Council was vest with the autonomy to award Higher National Diploma (HND) through the National Board for Professional and Technical Examination (NABPTEX). With the coming into force of the Polytechnic Act (Act 745) in 2007, the PNDC Law 321 of 1992 was repealed to allow polytechnics the autonomy to award Higher National Diplomas (HND), Diplomas, Certificates and other degrees that the Polytechnic may deem appropriate, all accredited by the National Accreditation Board (NAB).

The Technical University Act, 2016, (Act 922) converted together with 8 other Polytechnics, Accra Polytechnic to Accra Technical University, given it a Technical University status. The elevation was aimed at enhancing technical training with emphasis on producing world-class graduates molded in excellence and professionalism in diverse technical programmes in theory and in practice. Currently, the University has five (5) faculties – Faculty of Engineering, Faculty of Built Environment, Faculty of Applied Sciences, Faculty of Applied Arts, and Faculty of Business – and sixteen (16) departments.

MANDATE, VISION, MISSION, CORPORATE GOVERNANCE, SHARED VALUES AND ACADEMIC PHILOSPHY OF ATU

Mandate

By the provisions of the Technical University Act 2016 (Act 922) as amended, ATU is mandated to provide higher education in engineering, science and technology-based disciplines, technical and vocational education and training in applied arts and related disciplines in accordance with the following principles:

a) Higher education shall be made equally accessible to all persons suitably qualified and capable of benefiting from education and training offered at a technical university;

b) Programmes of study shall take into consideration the multiplicity of scientific theories and methodologies;

c) Use competency-based and practice-oriented approach in teaching, organization and delivery of courses;

d) Develop strong linkages and collaboration with relevant industries, businesses, professional bodies and technical experts in the delivery of programmes;

e) Offer programmes and courses within the mandate of a technical university; and

f) Provide opportunities for skills development applied research and publication of research findings.

Our Vision

To be recognized as the top Technical University in Ghana, with strong regional influence.

Our Mission

To advance technical knowledge by creating a conducive environment for applied research, quality teaching and competency-based training, with a high impact on industry and business creation.

Corporate Governance

The University's governing body with ultimate responsibility for the affairs of the University, is the Governing Council. This is done in collaboration with the Management Board, the Academic Board, and other departments, units and committees. The governance structure of the University is enshrined in its Statutes (which stems from the Technical University Act) from which Governing Council and aforementioned departments and committees derive their powers.

Shared Values

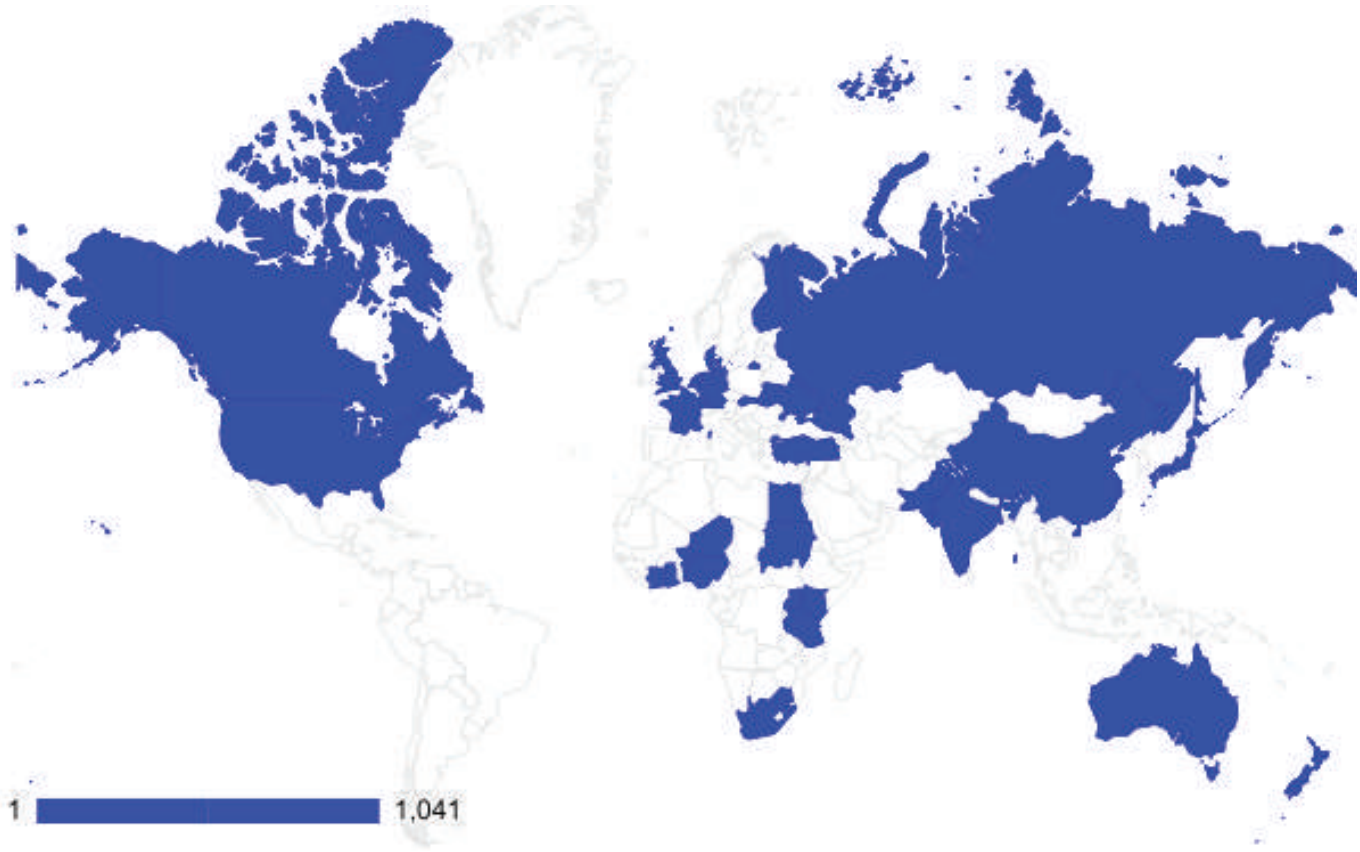
Integrity, Creativity and Excellence (ICE)

Philosophy

Every individual has a natural inclination towards learning and the ability to develop competency in at least one skill that would contribute to the development of the individual and society. We believe in Education-for-work through the acquisition of relevant skills and competencies in ICT, Leadership and Entrepreneurship for the world of work.

RESEARCH AFFILIATIONS AND COLLABORATION AT A GLANCE

Global Research Affiliations/Collaborations

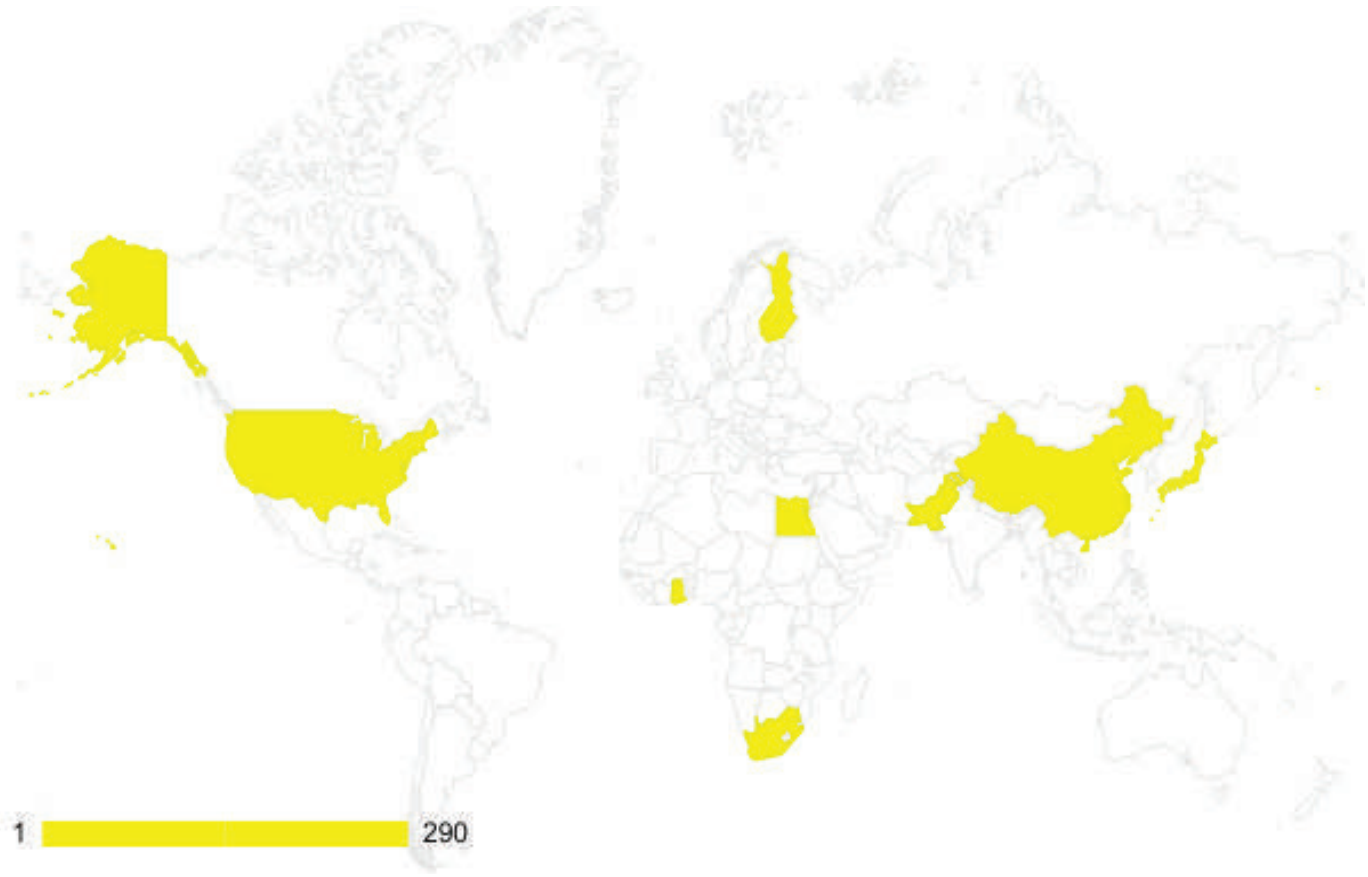


Number of research authors affiliation
Africa – 11
Asia – 4
Antarctica - 0
Europe - 10
North America - 2
Oceania - 2
South America - 0

As clearly depicted in the legend the number attached to each continent shows the number of countries that ATU has author affiliation.

Legend
Authors Affiliations
No Affiliations

Faculty of Engineering – Department of Mechanical Engineering: Research Affiliations/Collaborations



Number of research authors affiliation
Africa – 3
Asia – 3
Europe - 2
North America - 1

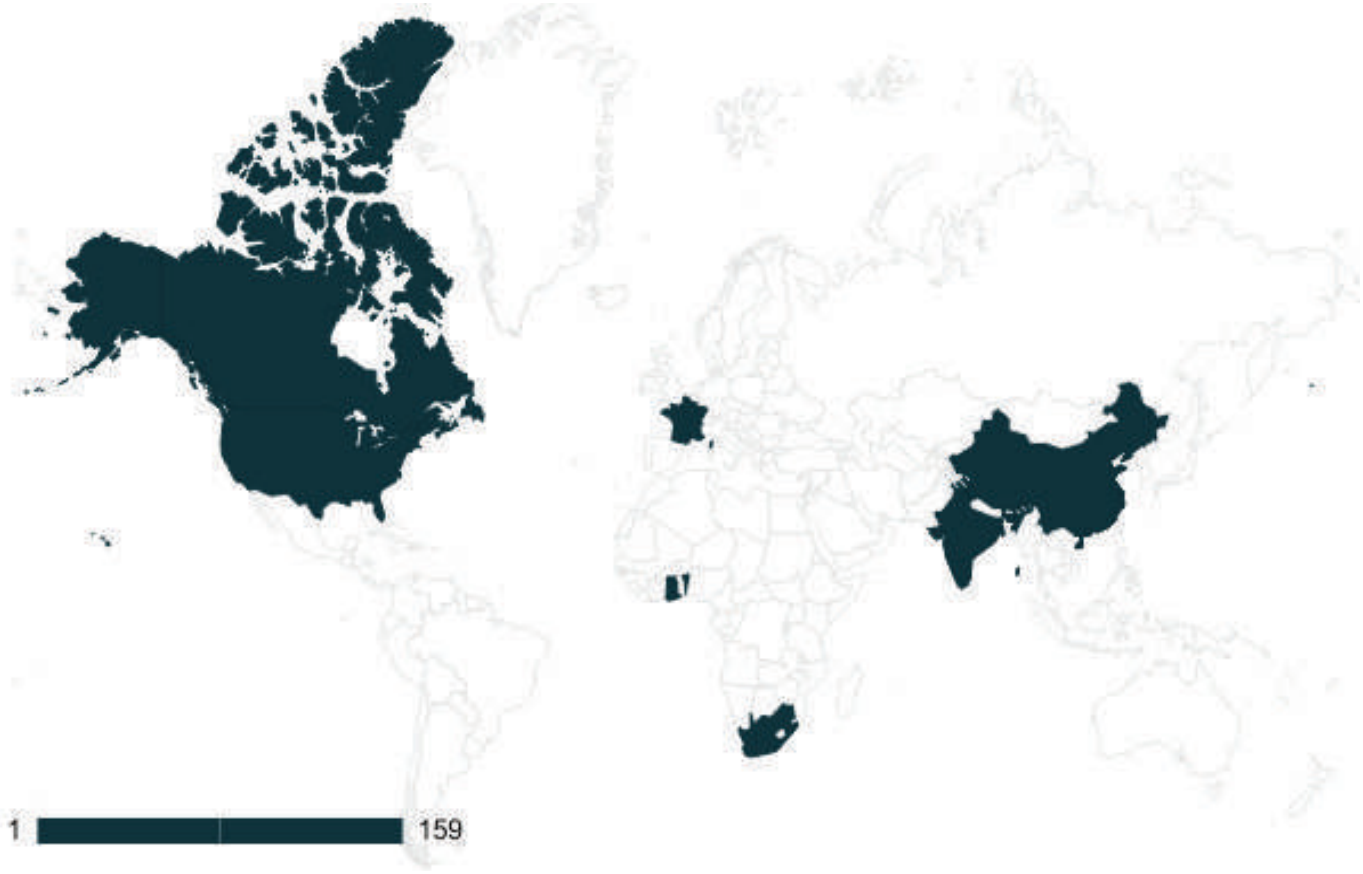
1 represents the number of authors from the least countries (Pakistan) whiles 290 represents authors from the most country (China) in the continent as clearly shown in the legend above, but a total of 9 countries have affiliations with the department.

Legend

Authors Affiliations

No Affiliations

Faculty of Engineering – Department of Electrical/Electronic Engineering: Research Affiliations/Collaborations



Number of research authors affiliation
Africa – 3
Asia - 3
Europe - 1
North America – 2

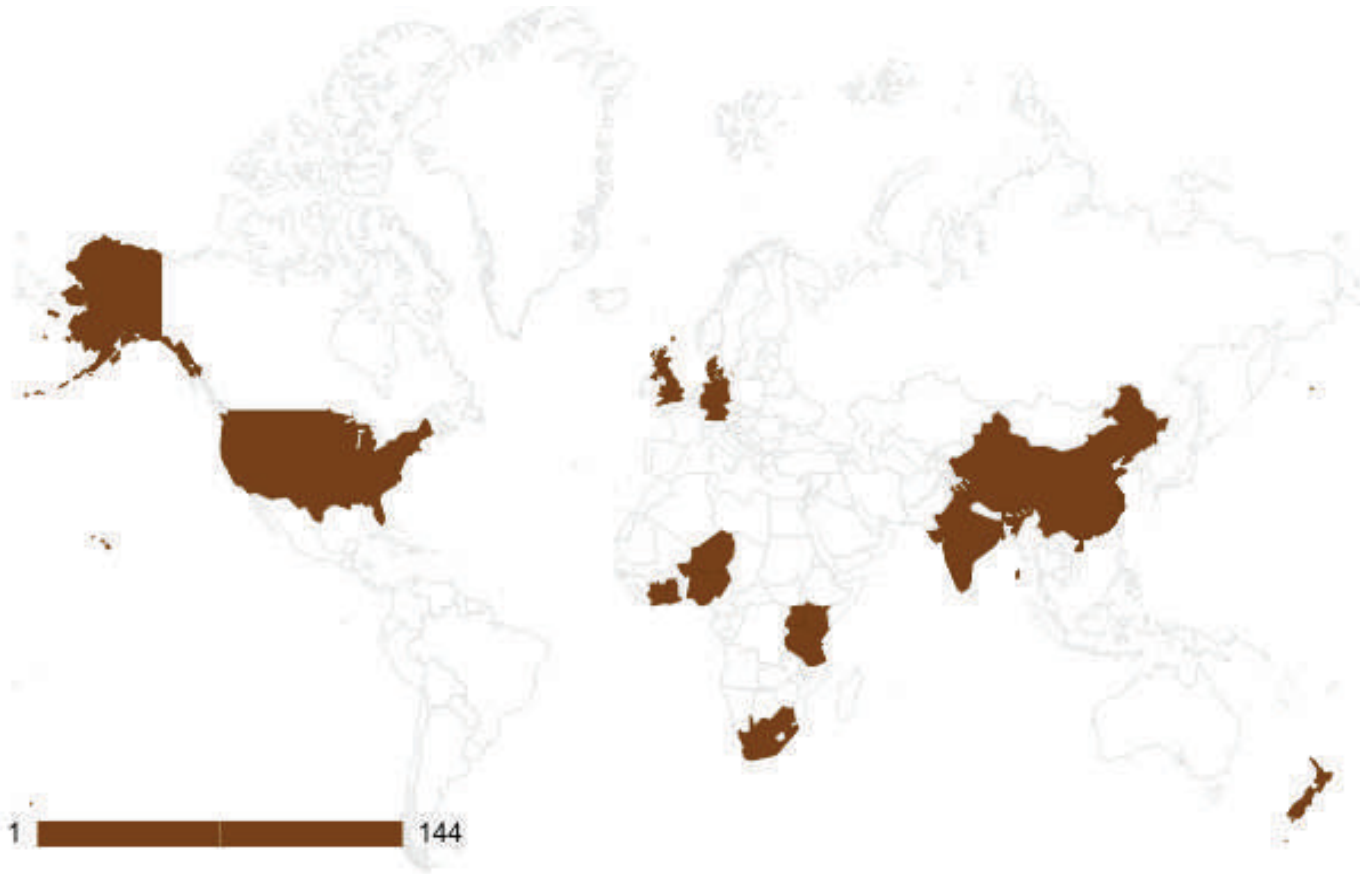
1 represents the number of authors from the least countries (Canada and France) whiles 159 represents authors from the most country (Ghana) in the continent as clearly shown in the legend above, but a total of 9 countries have affiliations with the department.

Legend

Authors Affiliations

No Affiliations

Faculty of Engineering – Department of Civil Engineering: Research Affiliations/Collaborations



Number of research authors affiliation
Africa – 8
Asia - 2
Europe - 3
North America – 1
Australia - 1

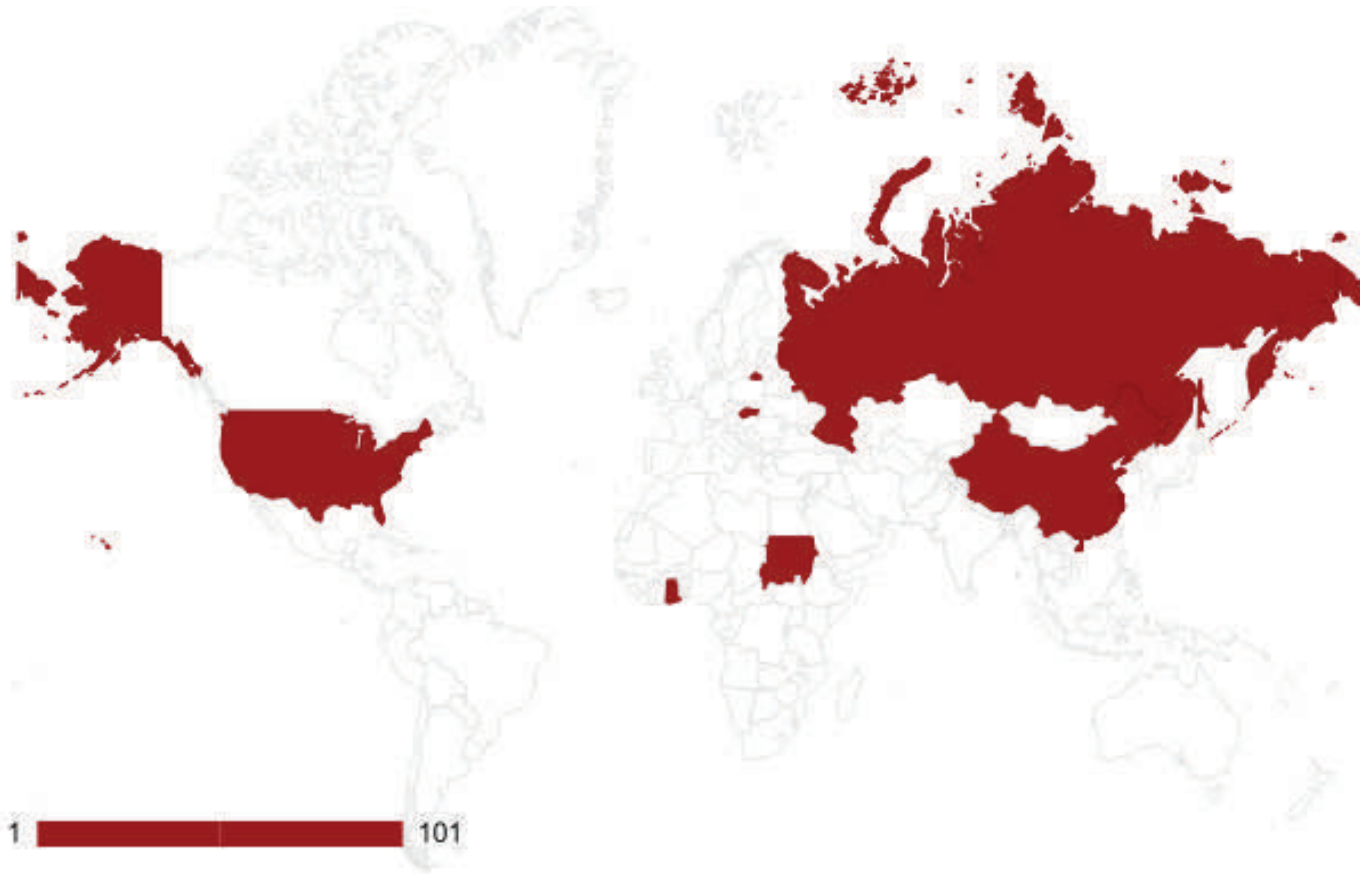
1 represents the number of authors from the least countries (Kenya, Tanzania, and Niger) whiles 144 represents authors from the most country (Ghana) in the continent as clearly shown in the legend above. A total of 15 countries have affiliations with the department.

Legend

Authors Affiliations

No Affiliations

Faculty of Applied Sciences – Department of Science Laboratory Technology (SLT): Research Affiliations/Collaborations

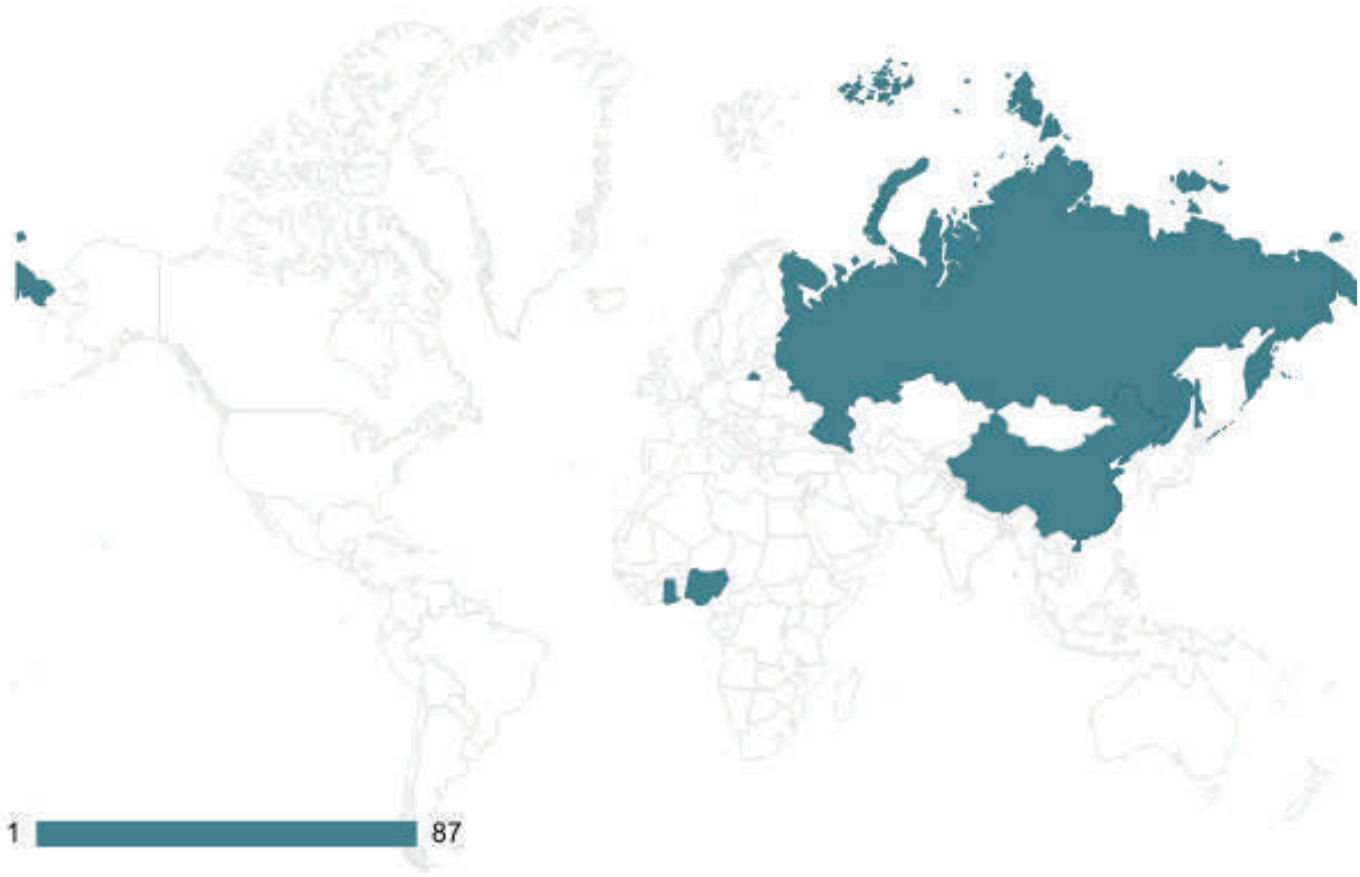


Number of research authors affiliation
Africa – 2
Asia - 1
Europe - 2
North America – 1
Australia - 1

1 represents the number of authors from the least countries (USA and Australia) whiles 101 represents authors from the most country (Ghana) in the continent as clearly shown in the legend above. A total of 7 countries have affiliations with the department.

Legend
Authors Affiliations
No Affiliations

Faculty of Applied Sciences – Medical Laboratory Technology (MLT): Research Affiliations/Collaborations



Number of research authors affiliation
Africa – 2
Asia - 1
Europe – 1

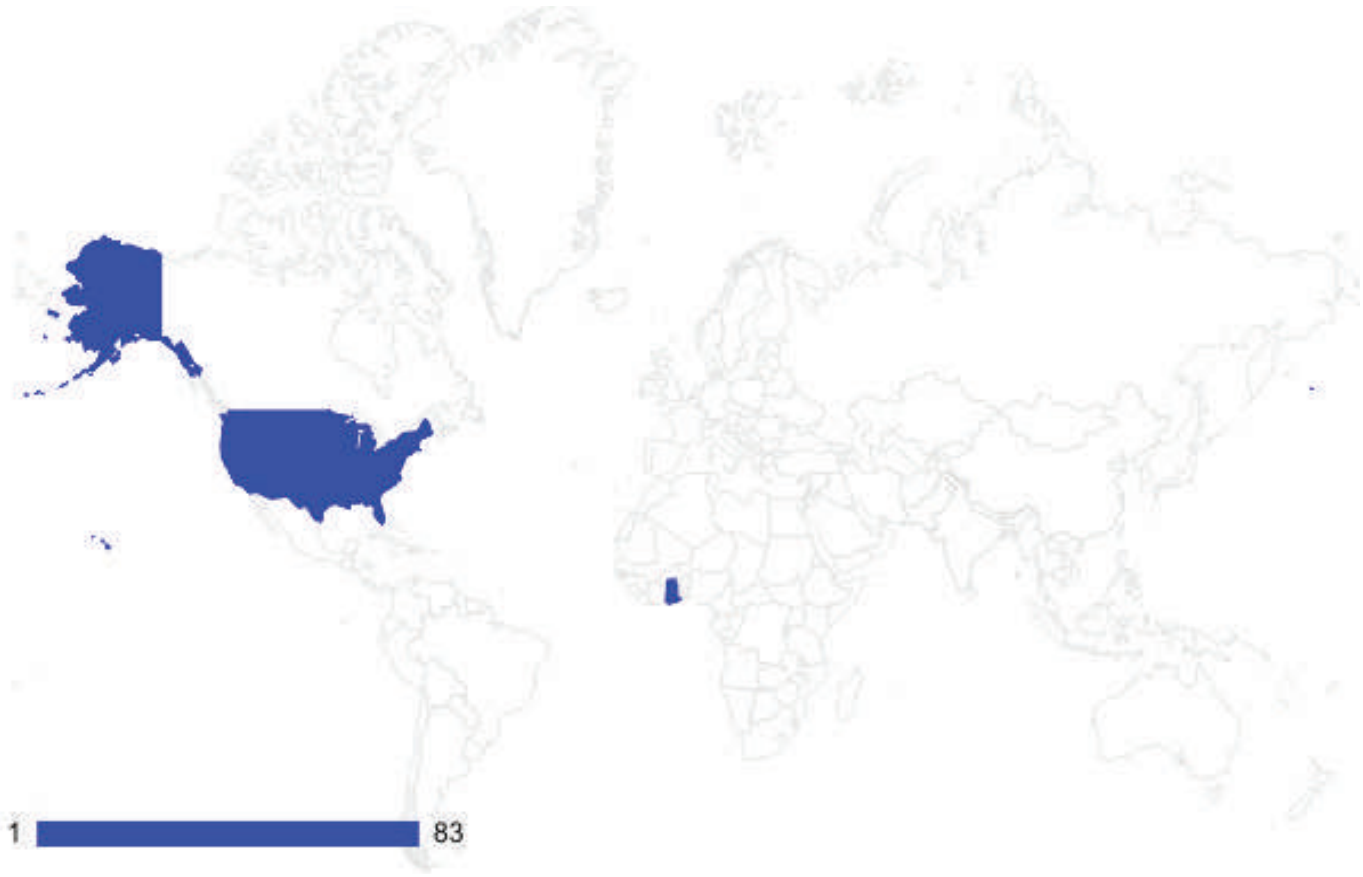
1 represents the number of authors from the least countries (Nigeria and Russia) whiles 87 represents authors from the most country (Ghana) in the continent as clearly shown in the legend above. A total of 4 countries have affiliations with the department.

Legend

Authors Affiliations

No Affiliations

Faculty of Applied Sciences – Department of Applied Mathematics and Statistics: Research Affiliations/Collaborations



Number of research authors affiliation
Africa – 1
North America - 1

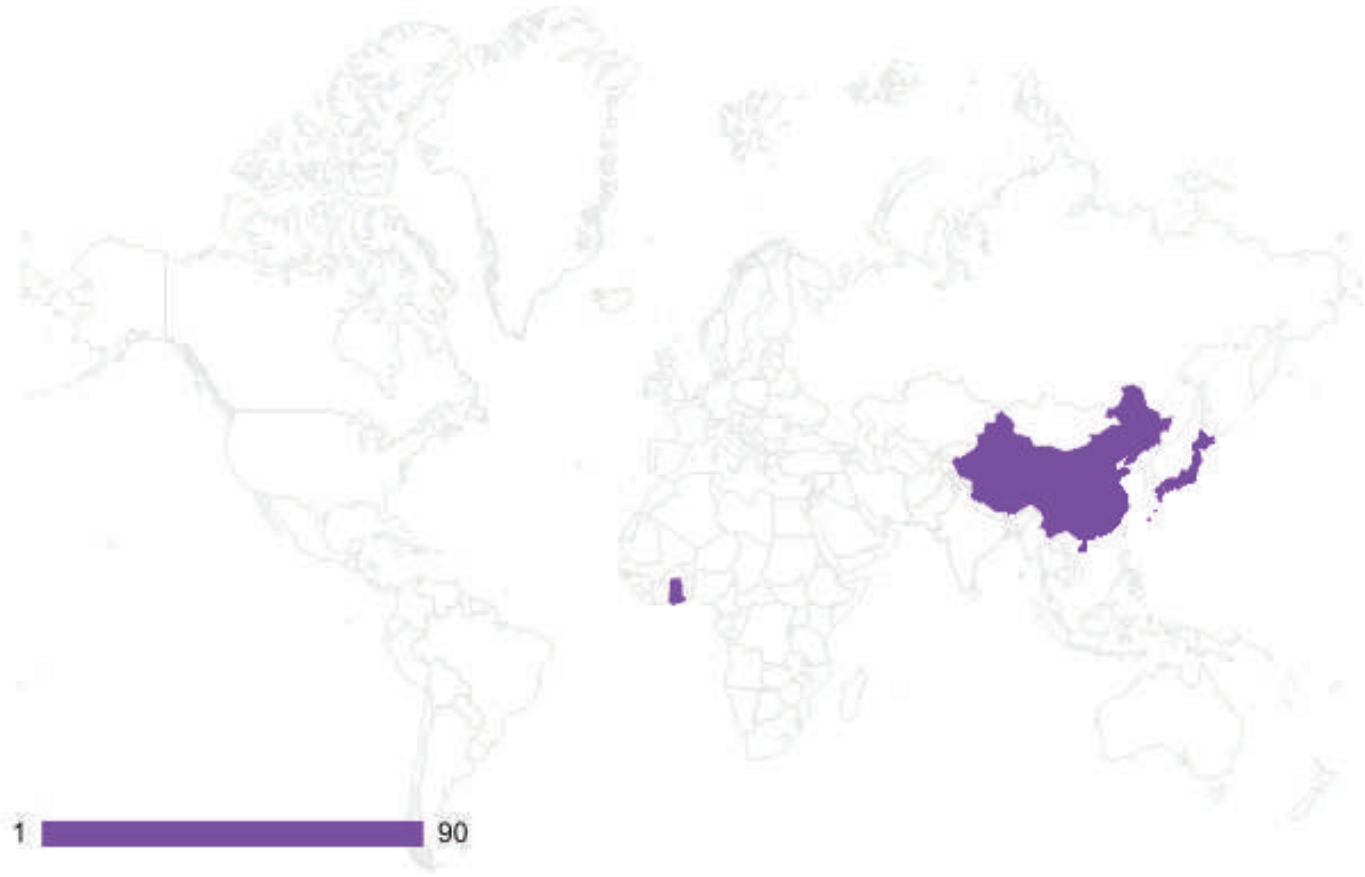
Legend

Authors Affiliations

No Affiliations

1 represents the number of authors from the least countries (USA) whiles 83 represents authors from the most country (Ghana) in the continent as clearly shown in the legend above. A total of 2 countries have affiliations with the department.

Faculty of Applied Sciences – Department of Computer Science: Research Affiliations/Collaborations

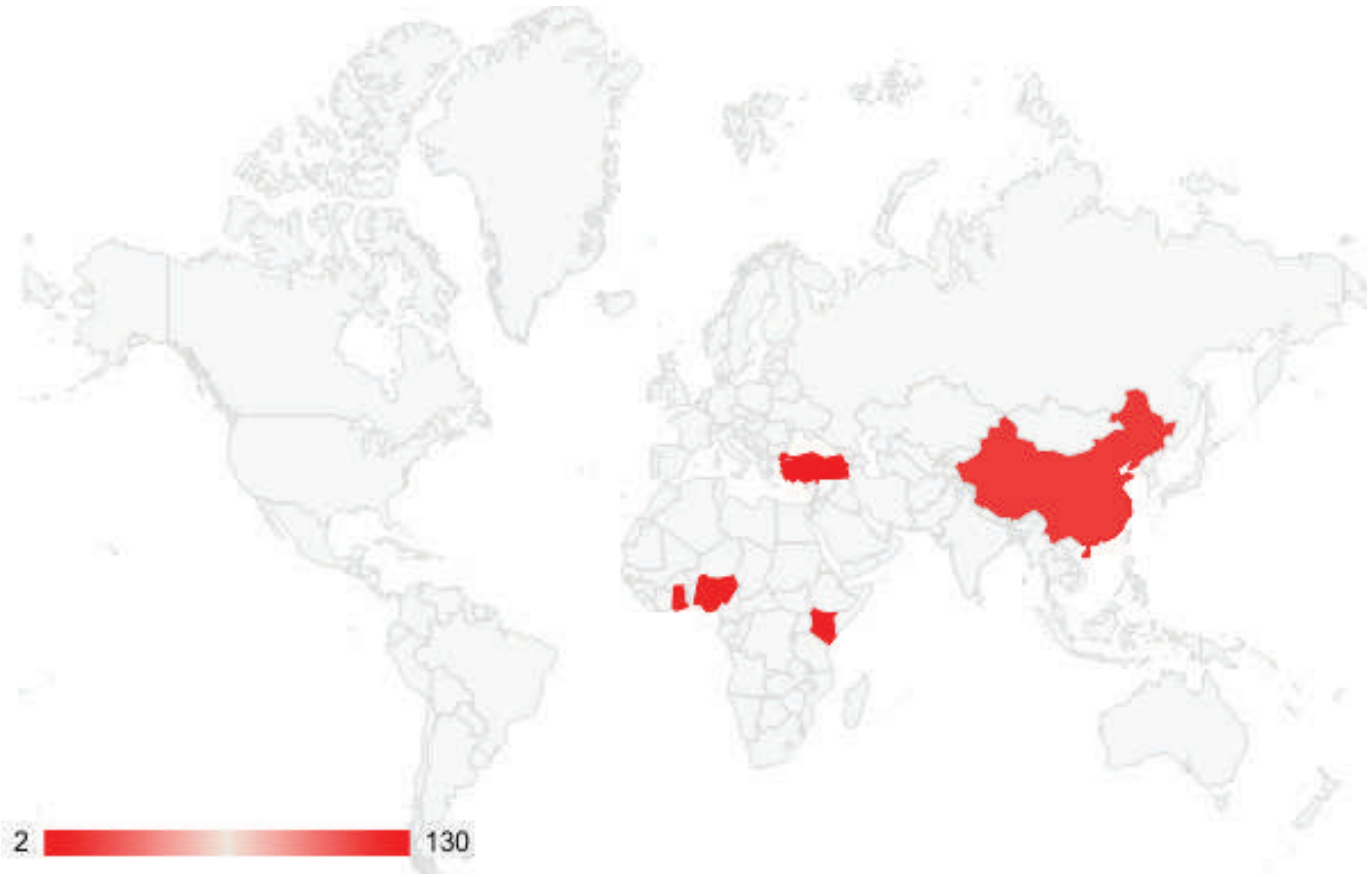


Number of research authors affiliation
Africa – 1
Asia - 2

Legend
Authors Affiliations
No Affiliations

1 represents the number of authors from the least countries (China) whiles 90 represents authors from the most country (Ghana) in the continent as clearly shown in the legend above. A total of 3 countries have affiliations with the department.

Faculty of Business - Department of Marketing: Research Affiliations/Collaborations

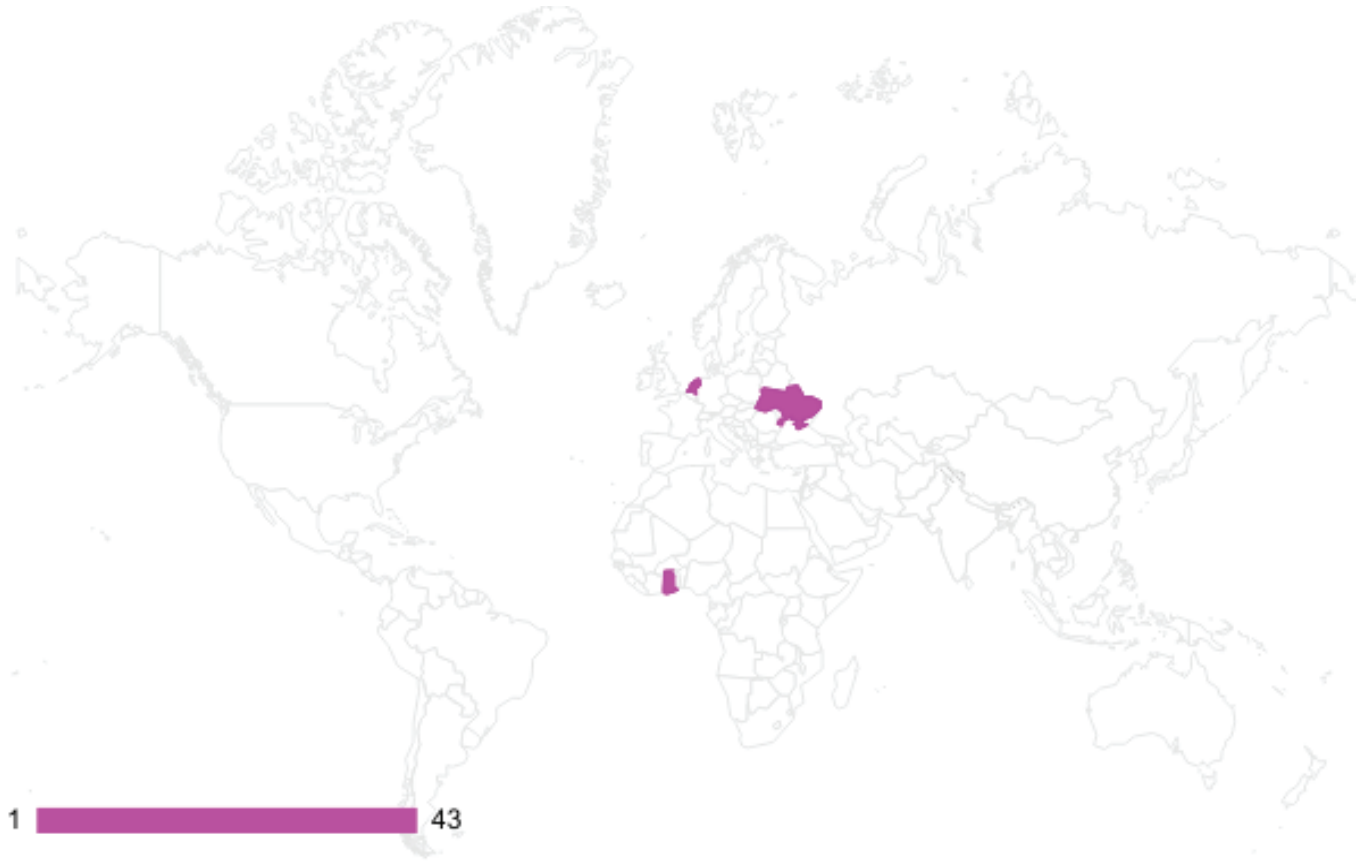


Number of research authors affiliation
Africa – 3
Asia - 1
Europe – 1

Legend
Authors Affiliations
No Affiliations

2 represents the number of authors from the least countries (Turkey and Kenya) whiles 130 represents authors from the most country (Ghana) in the continent as clearly shown in the legend above. A total of 5 countries have affiliations with the department.

Faculty of Business - Department of Accounting and Finance: Research Affiliations/Collaborations



Number of research authors affiliation
Africa – 1
Europe - 2

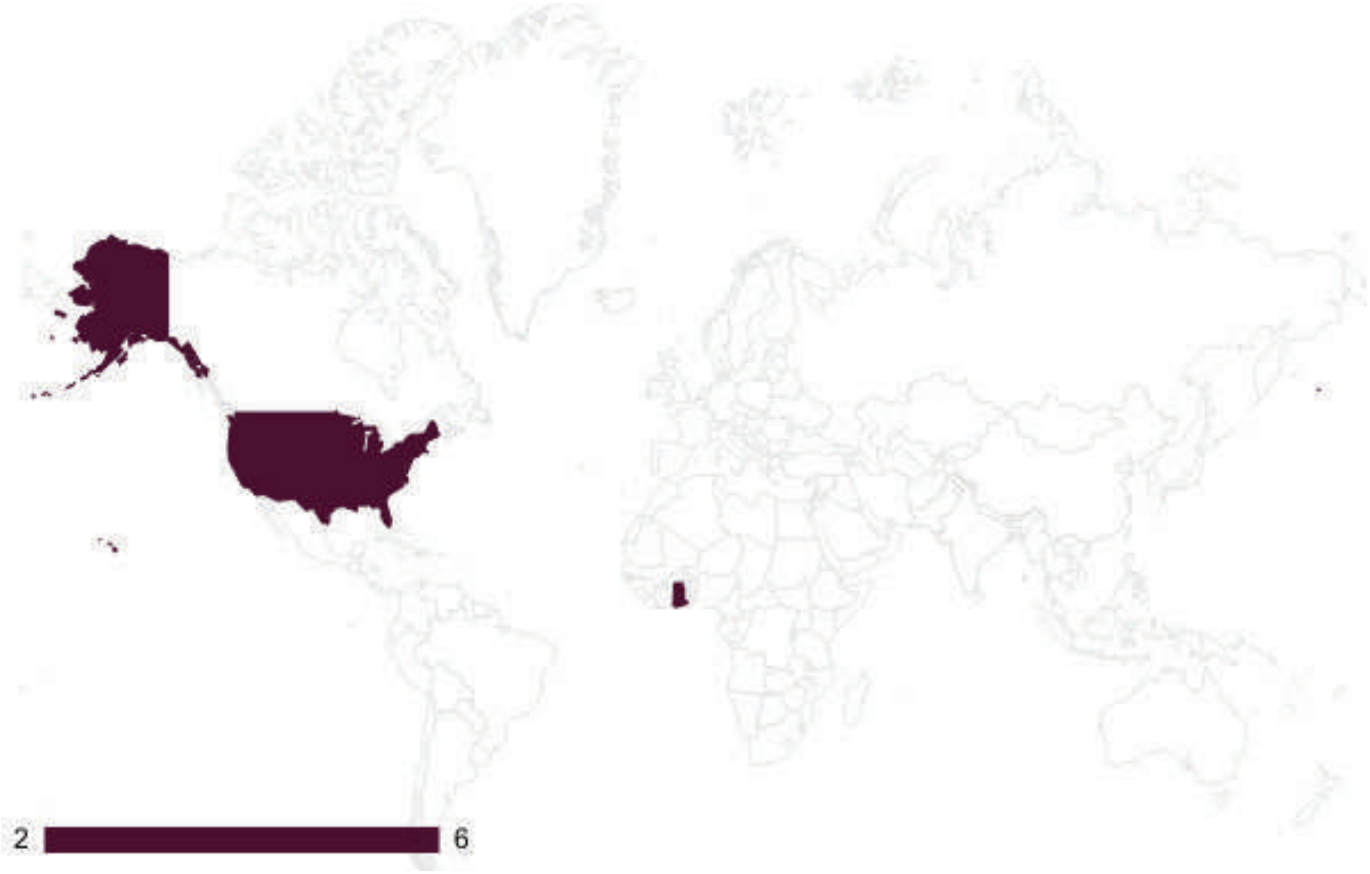
Legend

Authors Affiliations

No Affiliations

1 represents the number of authors from the least countries (Netherlands and Ukraine) whiles 43 represents authors from the most country (Ghana) in the continent as clearly shown in the legend above. A total of 3 countries have affiliations with the department.

Faculty of Business - Department of Procurement and Supply: Research Affiliations/Collaborations



Number of research authors affiliation
Africa – 1
North America - 1

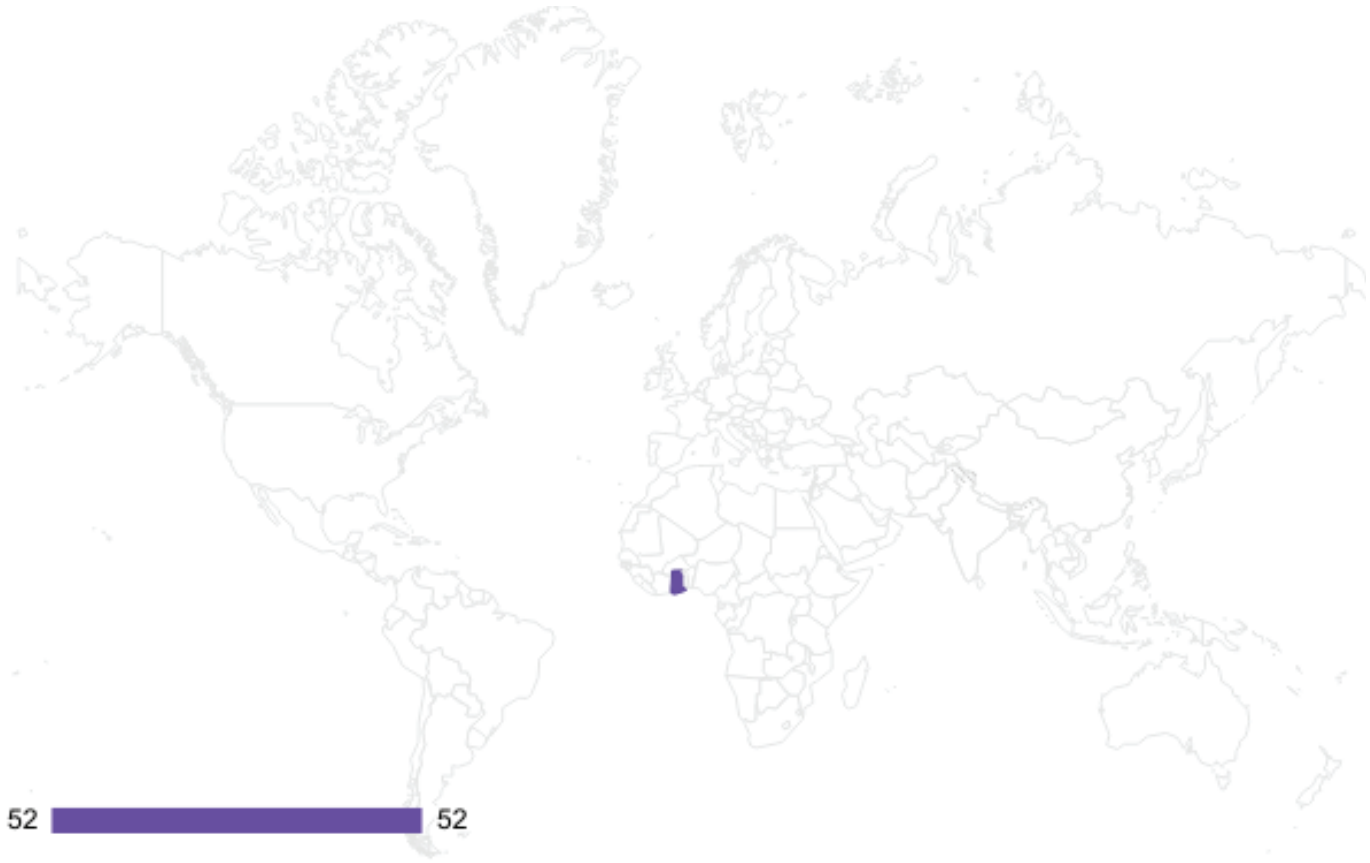
2 represents the number of authors from the least country (Ghana) whiles 6 represents authors from the most country (USA) in the continent as clearly shown in the legend above. A total of 2 countries have affiliations with the department.

Legend

Authors Affiliations

No Affiliations

Faculty of Business – Department of Management and Administration: Research Affiliations/Collaborations



Number of research authors affiliation
Africa – 1

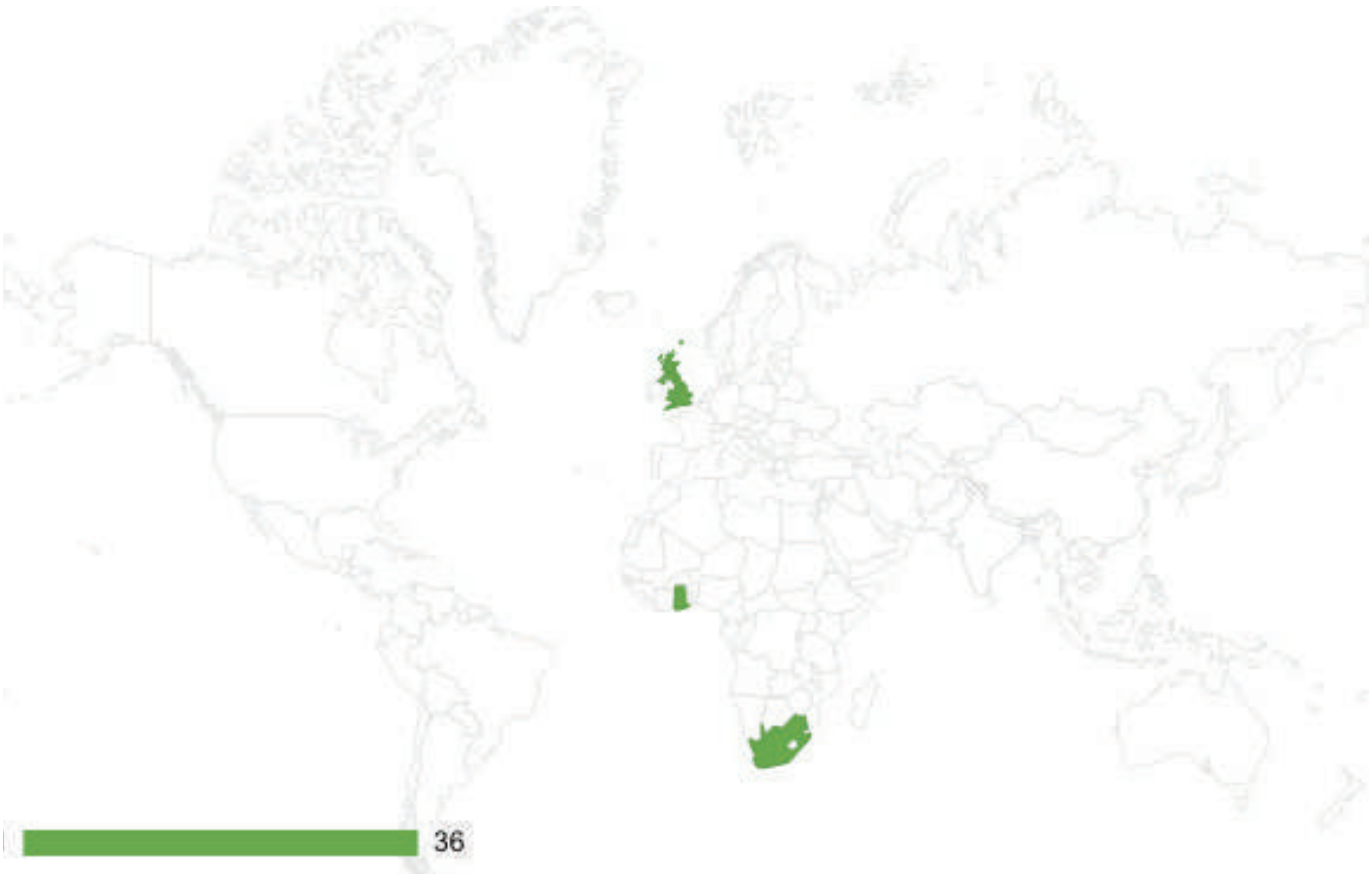
52 represents the number of authors from one country (Ghana) in the continent as clearly shown in the legend above.

Legend

Authors Affiliations

No Affiliations

Faculty of Built Environment – Department of Building Technology: Research Affiliations/Collaborations



Number of research authors affiliation
Africa – 2
Europe - 1

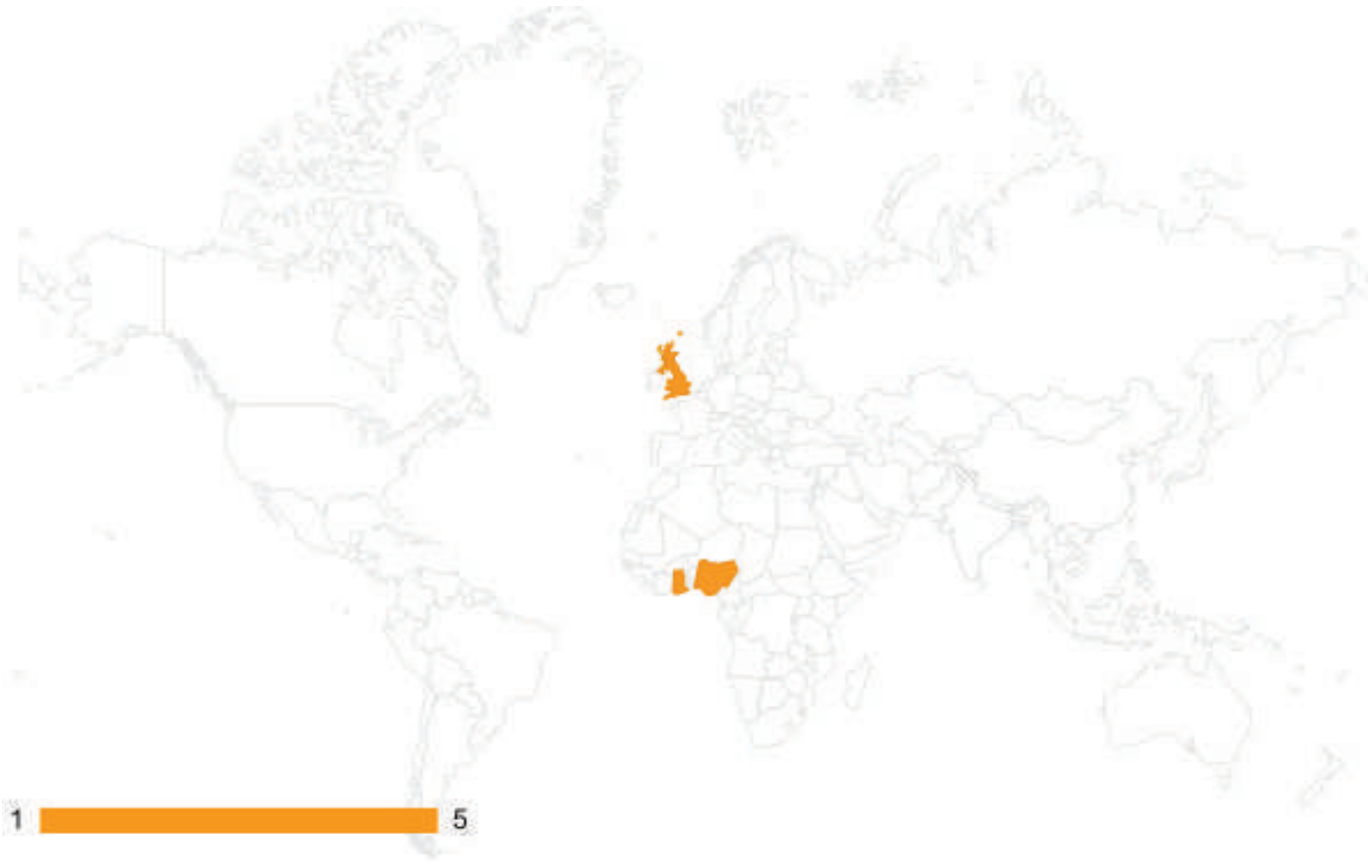
1 represents the number of authors from the least countries (United Kingdom) whiles 36 represents authors from the most country (Ghana) in the continent as clearly shown in the legend above. A total of 3 countries have affiliations with the department.

Legend

Authors Affiliations

No Affiliations

Faculty of Built Environment – Department of Interior Design and Upholstery Technology: Research Affiliations/Collaborations



Number of research authors affiliation
Africa – 2
Europe - 1

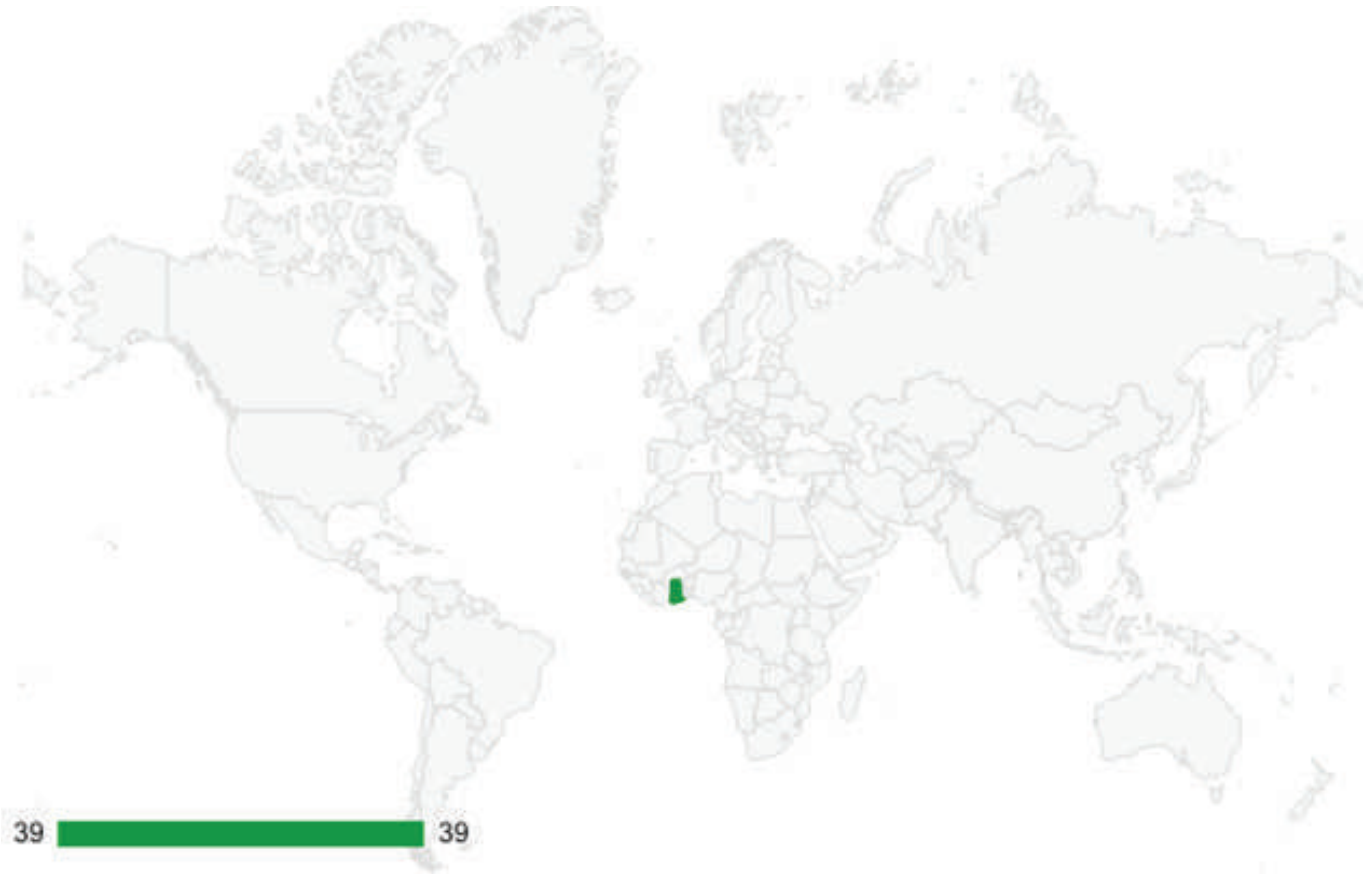
1 represents the number of authors from the least countries (Nigeria) whiles 5 represents authors from the most country (Ghana) in the continent as clearly shown in the legend above. A total of 3 countries have affiliations with the department.

Legend

Authors Affiliations

No Affiliations

Faculty of Applied Arts - Department of Hotel Catering & Institutional Management (HCIM): Research Affiliations/Collaborations



Number of research authors affiliation
Africa – 1

39 represents the number of authors from one country (Ghana) in the continent as clearly shown in the legend above.

Legend

Authors Affiliations

No Affiliations

Faculty of Applied Arts - Department of Fashion Design and Textiles: Research Affiliations/Collaborations



Number of research authors affiliation
Africa – 1

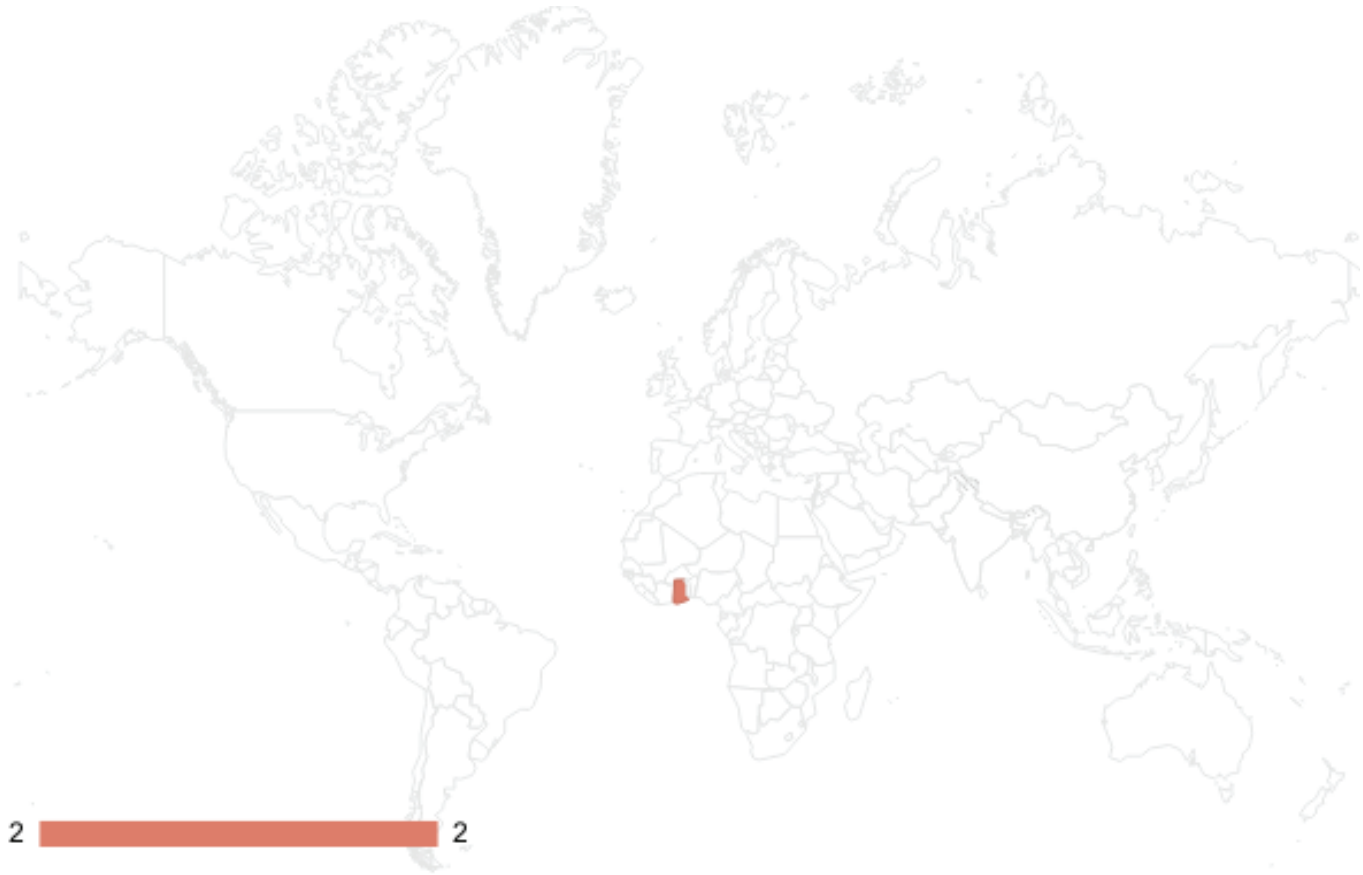
9 represents the number of authors from one country (Ghana) in the continent as clearly shown in the legend above.

Legend

Authors Affiliations

No Affiliations

Faculty of Applied Arts - Department of Liberal Studies and Communication Technology: Research Affiliations/Collaborations



Number of research authors affiliation
Africa – 1

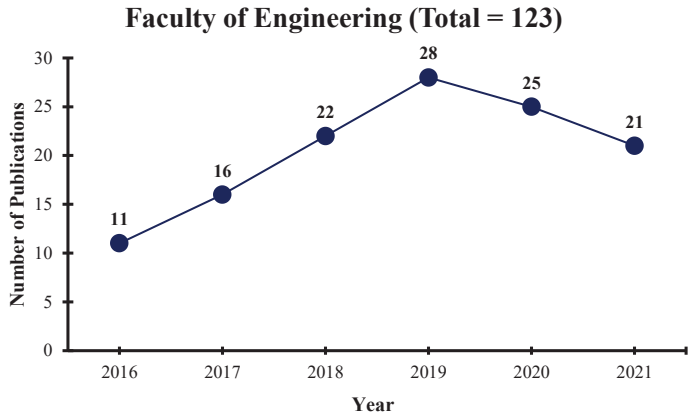
2 represents the number of authors from one country (Ghana) in the continent as clearly shown in the legend above.

Legend

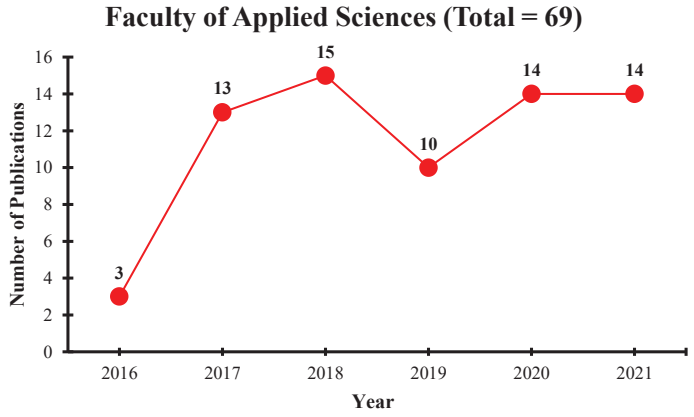
Authors Affiliations

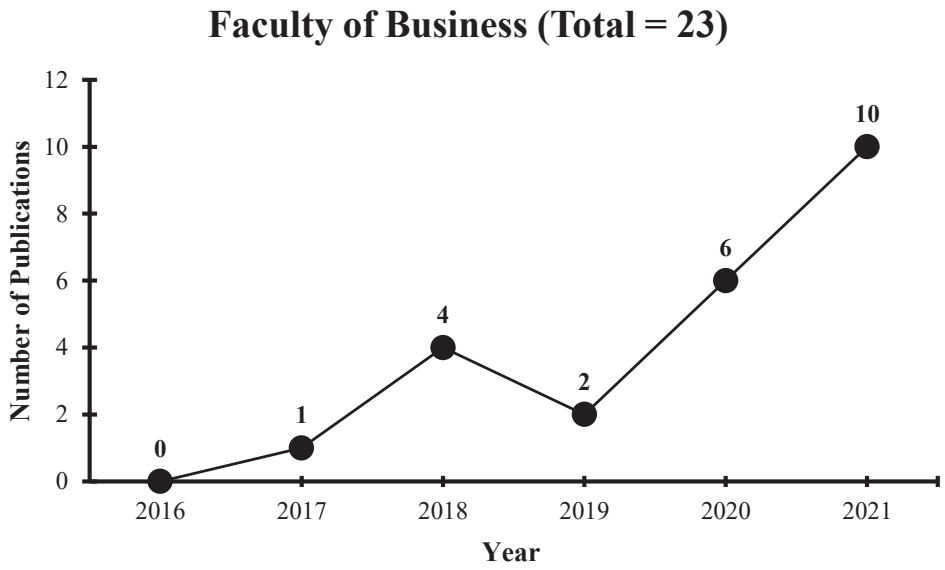
No Affiliations

FACULTY RESEARCH PUBLICATION TRENDS (2016-2021) IN REPUTABLE/ HIGH IMPACT (WEB OF SCIENCE AND SCOPUS) OUTLETS

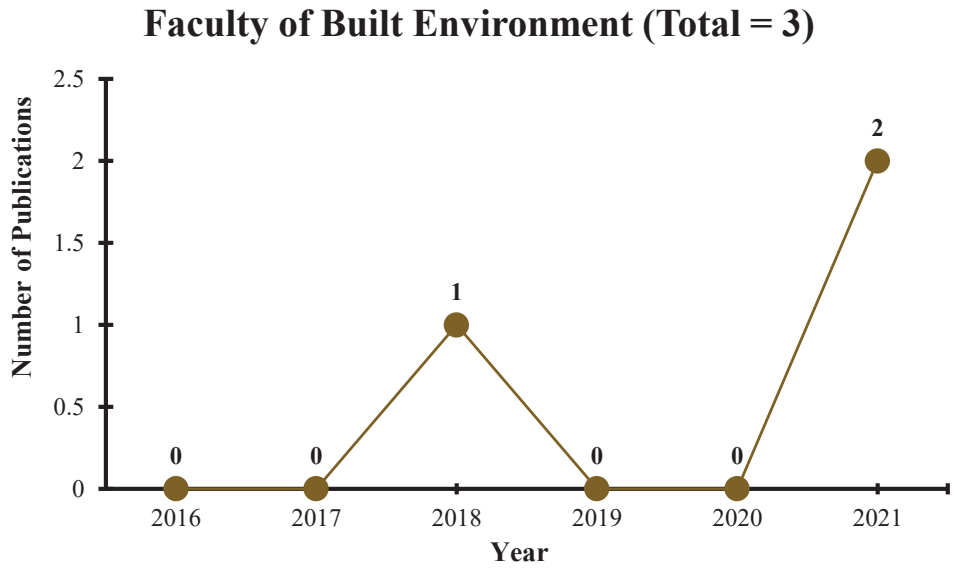


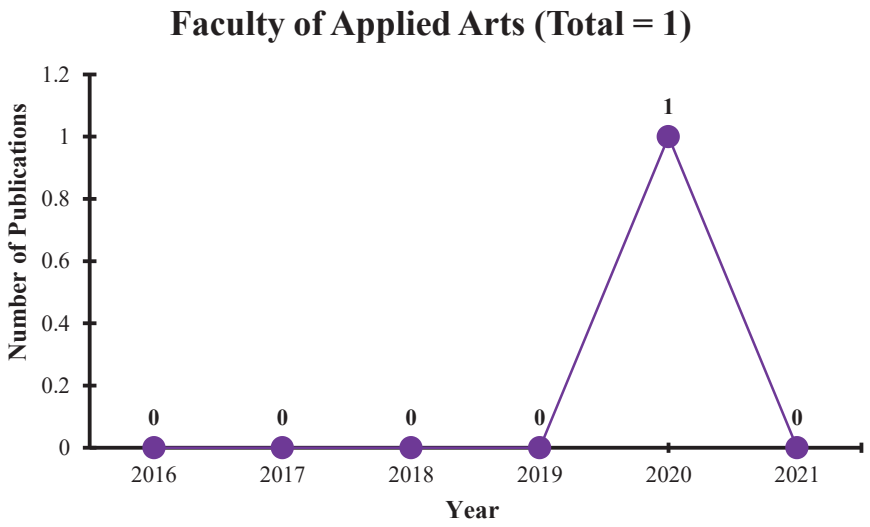
Scopus Clarivate Web of Science™



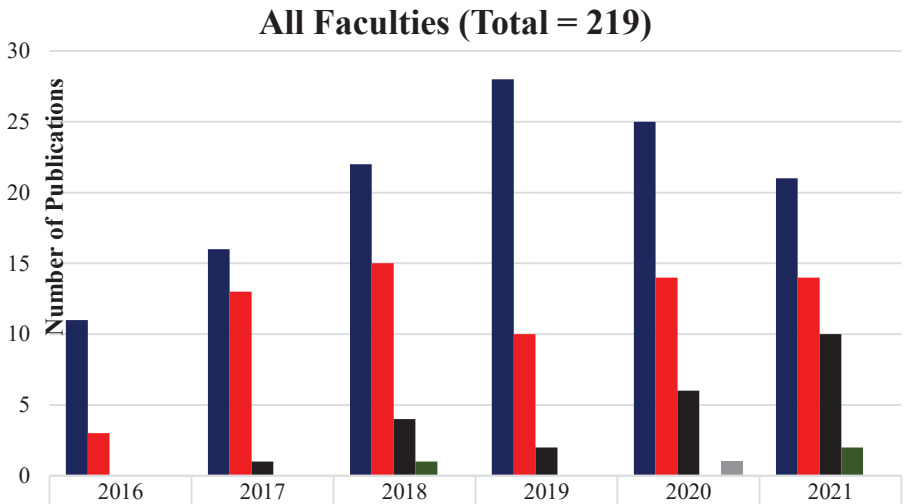

Faculty of Business (Total = 23)
Number of Publications
12
10
8
6
4
2
0
0
1
4
2
6
10
2016
2017
2018
2019
2020
2021
Year


Scopus
Clarivate
Web of Science™


Faculty of Built Environment (Total = 3)
Number of Publications
2.5
2
1.5
1
0.5
0
0
0
1
0
0
2
2016
2017
2018
2019
2020
2021
Year







	2016	2017	2018	2019	2020	2021
Faculty of Engineering	11	16	22	28	25	21
Faculty of Applied Sciences	3	13	15	10	14	14
Faculty of Business	0	1	4	2	6	10
Faculty of Built Environment	0	0	1	0	0	2
Faculty of Applied Arts	0	0	0	0	1	0

EXTERNAL RESEARCH GRANTS, FUNDING, AND RELATED ACTIVITIES



PROJECT ONE

Title of Project: Enhancing Graduate Employability in Ghana. Embedding Social Enterprise Skills Within Higher Education Framework.

Project Period: January to September, 2022.

Project Partners: University of Huddersfield, University of Bolton, Accra Technical University, British Council and Social Enterprise Ghana.

ATU Project Team Members: Prof. Samuel Nii Odai, Prof. Ernest Christian Winful, Dr. Chosniel Ocloo, Mr. Frank Frimpong Opuni, Dr. Emelia Ohene Afriyie, Dr. Kofi Opoku-Asante, and Mr. Josiah Nii Adu Quaye.

Grant Provider: British Council

Grant/Funding Award: £120,000

Summarized Project Description

Accra Technical University, University of Huddersfield, British Council, Social Enterprise Ghana and University of Bolton are in partnership on this project to respond to this challenge.



Some staff of ATU and representatives from British Council

The project involves exploratory research with young people to develop a new understanding of the meanings that work hold for them and the unique challenges they face in securing appropriate work. This study aims to generate new insights into the experiences, attitudes, barriers and strategies of young people as they navigate the social reality of securing meaningful work by Adopting a solution/ strengths-based approach with young people as partners, recognizing their local knowledge, experience, creativity and skills; Develop skills led resource training programme that will equip young people with contemporary employability skills and knowledge presented within the modern enterprise; Support the development of young people in participatory peer research, enabling sense-making and draw on their creativity to co-produce strategies for change and skill development; Deliver an innovative dissemination strategy with policymakers, practitioners, communities and young people; Work closely with local partners to maximize opportunities for ownership, engagement with findings and for co-production of sustainable skills-based outcomes

PROJECT TWO

Title of Project: Developing ATU Staff Competences to Design a Commercial Agri-business Course Targeted at Female Entrepreneurs.

Project Period: 1st April 2021 to 31st July 2022

Project Partners: Maastricht School of Management (MSM), Netherlands

ATU Project Team Members: Prof. Samuel Nii Odai, Prof. Amevi Acakpovi, Prof. Felix Kutsanedzie, Mr. Martin Owusu Amoamah, Prof. Nana Yaw Asabere, Prof. Ernest Winful, Dr. Glenn Gyimah, Dr. Phyllis Otu, Prof. Alice Mensah, Dr. Emelia Ohene Afriyie, Mr. Robert Eshun, Ms. Edith Mensah, Mrs. Adelaide Owusu-Mensah, Dr. Cynthia Oduro-Nyarko, Dr. Victoria Owusu Ansah, Mrs. Lydia Adu-Gyamfi, Ms. Barbara Efua Akyaa Gyebi, Dr. Elikem Chosniel Ocloo, and Dr. Peter Nyanor.

Grant Provider: NUFFIC, Netherlands

Grant/Funding Award: €74,413.12

Summarized Project Description

On 20th January 2021 Maastricht School of Management (MSM) and Accra Technical University (ATU) submitted an application for a grant under the Orange Knowledge Programme Tailor Made Training (TMT). The application was registered under reference number OKPTMT.21/00053.

The application was successful and MSM (the grant recipient) was awarded a grant under the Orange Knowledge Programme Tailor Made Training. The grant was awarded for training in a



Team members from ATU and a meber from Maastricht in group photograph

project titled ***"Developing ATU Staff Competences to Design a commercial Agri-business Course Targeted at Female Entrepreneurs".***

The period for the grant is from 1st April 2021 to 31st March 2022 (extended to 31st July 2022 after application approval). The maximum amount of the grant is € 74,413.12. Selected ATU staff for the training and female entrepreneurs in Ghana will be the immediate and future beneficiaries of the project respectively.

In terms of long-term impact, the MSM-ATU TMT project seeks to contribute to Ghana's country priority development areas: Food and Nutrition Security, Water Management, Agriculture, Entrepreneurship, and Private Sector Development. Consequently, by the end of the project, ATU staff will be trained on how to design, package and offer a commercial Agri-business course for female entrepreneurs. The objective of the project will be achieved by training and coaching of eighteen (18) selected ATU staff members by MSM experts, over a period of 9-12 months. The training mode for Modules 1, 2 and 3 was Face-to-Face (F2F) on ATU Campus, specifically in the ATU Conference Centre. The facilitators travelled by flight from the Netherlands to conduct the training. Module 4, was facilitated in an online mode on the dates stipulated above.



Deans and Heads of Departments of ATU undergoing training in entrepreneuship led by Vin Morar and entrepreneurship expert from the Maastricht School of Management

During the training on Module 3, which was quite recent, two (2) female entrepreneurs, namely Rita Guribie (CEO/Founder, Sava Shea Company) and Cynthia Kaminta (Female Entrepreneur, Young at Heart Ghana) were invited to the training to speak on issues regarding their entrepreneurship in relation to their respective organizations. The training participants and facilitator also paid a business visit to Sava Shea Company at Medie, Accra.



Participants from ATU pictured in a discussion session at the training programme

PROJECT THREE

Title of Project: "Improved Energy Auditing" activity of the "Energy Efficiency and Demand Side Management Project".

Project Period: January 2020 to Date.

Project Partners and Grant Provider: This grant is part of the MCC fund and project, and it is coordinated by MiDA, Energy Commission and the Development Enviroenergy Services Limited (DESL), an international consulting service provider.

ATU Project Team Members: Prof. Amevi Acakpovi, Dr. Moro Adams, Mr. Mathias Bennet Michael, Mrs. Patricia Kwakye-Boateng, Dr. Stephen Edem Komla Bani, Mr. Emmanuel Kabu Oman, and Mr. Sydney Lloyd Abbey.

Grant/Funding Award: $94,976 (USD)

Summarized Project Description



Enrgy Audit experts from DESL india in a group photograph with participants from the Energy Training Audit workshop

Prof Amevi Acakpovi, an energy expert who doubles as the Pro Vice-Chancellor of Accra Technical University led a consortium to win the Sustainable Energy Service Centre (SESC) grant of the Millennium Development Authority in partnership with the Energy Commission which was inaugurated the 26th July, 2022.

The establishment of the Sustainable Energy Service Centers (SESCs) is a sub-activity under the "Improved Energy Auditing" activity of the "Energy Efficiency and Demand Side Management Project" of the Millennium Challenge Corporation (MCC) which is mainly targeting poverty reduction and sustainable economic growth. The SESC will ensure the efficient use and conservation of power, and have the potential to reach out and serve entities across the country and the West African Sub-region. Additionally, they will train and certify qualified professionals who will be available in the country to assist public and private institutions, industrial and commercial customers, to adopt and implement cost-effective energy savings measures.

Staff of the Centre had been given the requisite technical training on various aspects of energy management and audit through three Certification programmes, namely, the Sustainable Energy Management Professional (SEMP), the Sustainable Energy Audit Professional (SEAP) and the Energy Audit Practicals (EAP), all run by international energy consultants from India. The grant is valued at $94,976 (USD) including energy audit instruments, office and IT equipment and a vehicle (cross-country Land Cruiser Prado). For more information on the Centre, visit their website: https://atu.sescgh.com/.



Vice-Chancellor of ATU (3rd R) in a group photograph with beneficiaries of the SESC, representatives from the government, MiDA and some staff of ATU.

PROJECT FOUR

Title of Project: ATU-AFOS-DigiCap.

Project Period: January 2022 to December 2023.

Project Partners: AFOS Foundation for Entrepreneurial Development Cooperation, German Institute of Business and Technology (GIBT), Institute of ICT Professionals Ghana (IIPGh).

ATU Project Team Members: Prof. Nana Yaw Asabere, Prof. Ernest Christian Winful, Mr. Richard Fosu, Mr. Isaac Ofori Asare, and Mrs. Patricia Kwakye-Boateng.

Grant Provider: AFOS Foundation for Entrepreneurial Development Cooperation, Invest for Jobs, German Federal Ministry of Economic Cooperation and Development and Sequa, Germany.

Grant/Funding Award: €220,940

Summarized Project Description



The Vice-Chancellor of ATU unveils the plaque to inaugurate the newly established Flex Lab while a representative of AFOS foundation looks on

Prof. Nana Yaw Asabere, an ICT Expert who doubles as the Director of DRIPTT led a team towards the ATU-AFOS-DigiCap Project, which is mainly focused on harmonizing and harnessing the educational and fourth industrial revolution (4IR) benefits of improving Digital Capacity in two main disciplines, namely: Data Science and Business Intelligence within the University, through online and face-to-face sessions.

As part of the MOU signed on 23rd December 2021, included in this project are:

1. Establishment of this ICT Flex Lab which has currently been furnished with appropriate furniture, air conditioners, and forty (40) laptop computers.
2. Facilitation of a digital capacity (in-demand and practice-oriented) ICT certification training for staff and students in ATU.
3. Digital teaching skills training of ATU Staff, and
4. Establishment of a Career Support Centre in ATU in collaboration with Ashesi University (Systems Change Programme).

Through funding (grant) of €200,000.00 provided by AFOS, the establishment of the ICT Flex Lab and facilitation of digital capacity (in-demand and practice-oriented) ICT certification training for staff and students in ATU are currently ongoing and progressing successfully.



A cross-section of the first cohort of trainees for the AFOS-DigiCap Project



Inauguration of the Flex Lab: The Vice-Chancellor of ATU flanked by some key officers and a rep. from the AFOS foundation

PROJECT FIVE

Title of Project: Curriculum Co-development for Integrating MOOCs in Engineering Education.

Project Period: January 2020 to August 2021.

Project Partners/ Grant Provider: Carnegie African Diaspora Fellowship Program, Fall 2020 Grant – Prof. Robert Awuah Baffuor.

ATU Project Team Member: Prof. Amevi Acakpovi

Grant Provider: Carnegie African Diaspora Fellowship Program

Grant/Funding Award: $25,000

Summarized Project Description

Collaborative research to evaluate the effectiveness of using MOOCS to support engineering education; and building Capstone project supervision capacity at the Accra Technical University- Phase II".

PROJECT SIX

Title of Project: Business and Management Studies Curriculum Review and Research Capacity Building.

Project Period: January 2020 to August 2021.

Project Partners: Two fellows from Quinnipiac University and the University of Maryland Eastern Shore respectively in the persons of Prof. Iddrisu Awudu and Prof. Rexford Abaidoo.

ATU Project Team Member: Prof. Amevi Acakpovi

Grant Provider: Carnegie African Diaspora Fellowship Program

Grant/Funding Award: $25,000

Summarized Project Description

Collaborative research to evaluate the effectiveness of using MOOCS to support engineering education; and building Capstone project supervision capacity at the Accra Technical University- Phase II".

PROJECT SEVEN

Title of Project: Economics of incentivizing households to source separate solid waste: profitability of at-source collection and buy-back centres.

Project Period: June 2022 to December 2023.

Project Partners: Department of Environmental Health and Sanitation Education, Akenten Appiah-Menka University of Skills Training and Entrepreneurial Development, Mampong-Ashanti, Department of Civil Engineering, UENR.

ATU Project Team Members: Prof. Ernest C. Winful, and Dr. (Mrs.) Ing. Sarah Fanny Hackman Duncan.

Grant Provider: Carnegie African Diaspora Fellowship Program

Grant/Funding Award: Gh₵ 137,218

Summarized Project Description

The project is yet to commence.



PROJECT EIGHT

Title of Project: Empowering Technicians with Skills in Programming, Wiring and Troubleshooting PLCs Through a Well Designed Learning Management System (LMS).

Project Period: June 2018 to October 2020.

Project Partners Partners/Grant Provider: Skills Development Fund (SDF) Ghana - SDF-II-CALL 2 0787

ATU Project Team Member: Prof. Amevi Acakpovi

Grant Provider: NUFFIC, Netherlands

Grant/Funding Award: Gh¢ 399,984.40 equivalent to in USD 99,996.10 in 2018

Summarized Project Description

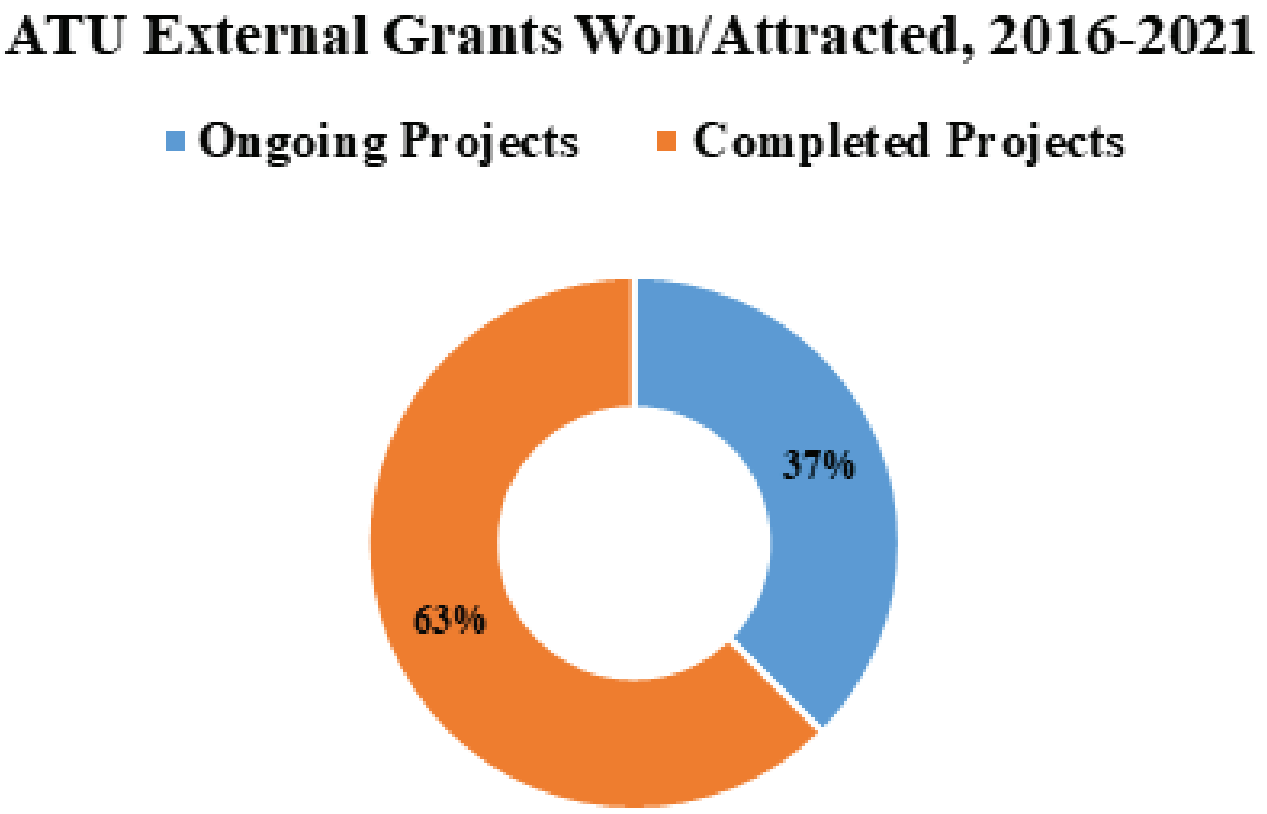
The project involved the implement tation of skills training to empower electrical technicians with skills in programming, wiring and troubleshooting PLCs through a well-designed LMS. The project was executed in partnership with the Ghana Electrical Contractors Association (GECA) that were beneficiaries of the training.

The main objective of the project was to implement a blended face-to-face and online approach to enhance PLC training for Electrical Technicians from both formal and informal sectors in Ghana.

The project successfully developed a CBT based curriculum to handle PLC training in Ghana; an online LMS to host the curriculum and manage PLC training. PLC training equipment were acquired from Italy, installed in ATU's dedicated laboratories and used to conduct skills training to electrical practitioners and a group of technicians and engineers from GECA. All trained individuals were also certified.



The Pro-Vice-chancellor of ATU interacting with trainees to be certified electrical technicians under the NUFFIC grant project

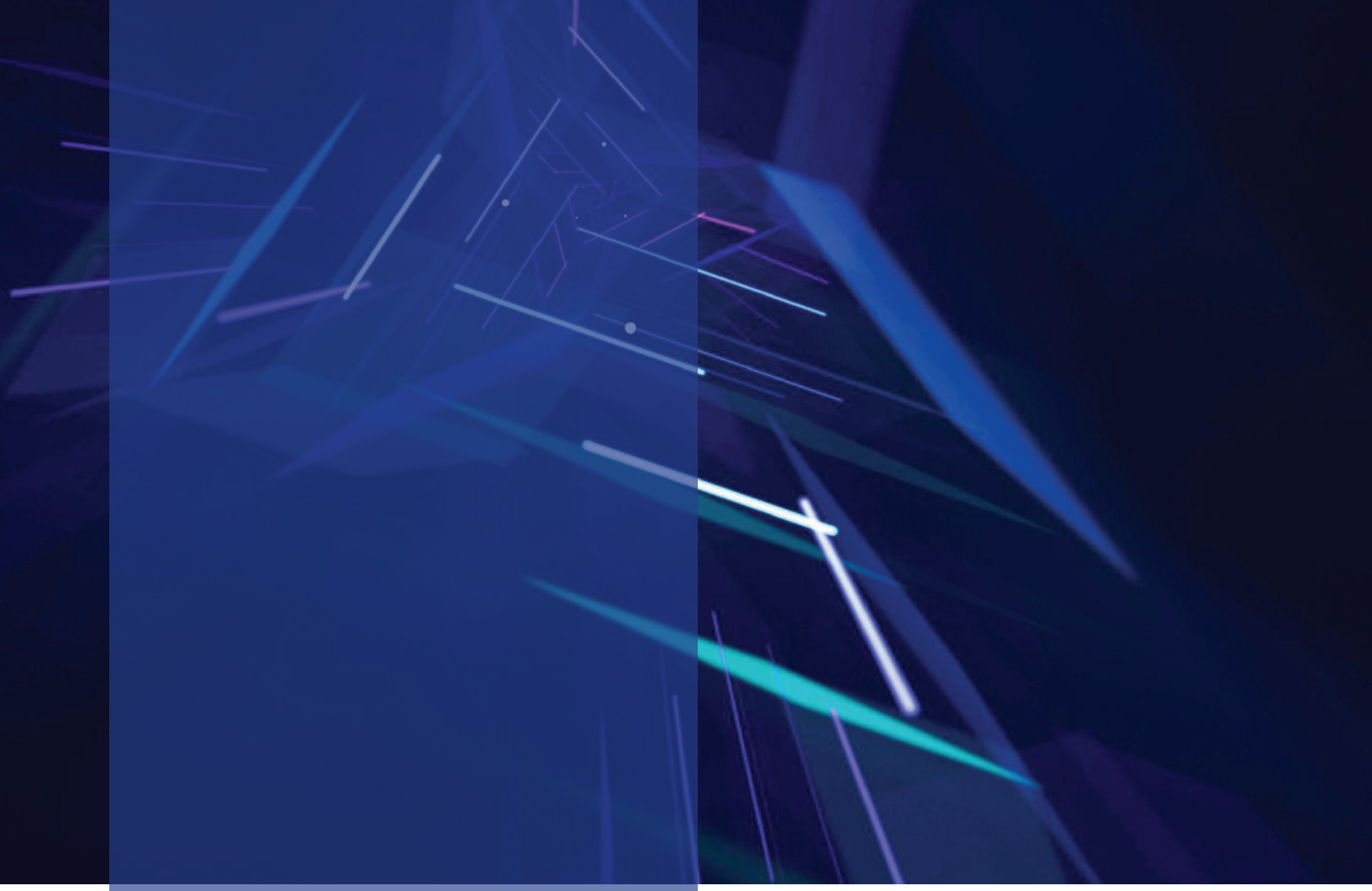

ATU External Grants Won/Attracted, 2016-2021
Ongoing Projects
Completed Projects
37%
63%

EXTERNALLY FUNDED RESEARCH AND PARTNERSHIP PROJECTS AT A GLANCE

Title of Project	Department	Donor	Principal Investigator/ Project Lead
Enhancing Graduate Employability in Ghana. Embedding Social Enterprise Skills Within Higher Education Framework	Accounting and Finance	British Council, January to September, 2022 £120,000	Prof. Ernest Christian Winful
Developing ATU Staff Competences to Design A Commercial Agri-Business Course Targeted at Female Entrepreneurs	Civil Engineering	Nuffic, Netherlands 1st April 2021 to 31st July 2022 €74,413.12	Prof. Samuel Nii Odai
Hosting of Sustainable Energy Services Center (SESC) in ATU	Electrical/Electronic Engineering	MiDA, Energy Commission and the Development Enviroenergy Services (DESL), an International Consulting Service Provider. January 2020 to Date $94,976 (USD)	Prof. Amevi Acakpovi
AFOS-digiCAP.gh – ICT Training Skills Programme in Business, Industry and Academia	Computer Science	German Ministry of Economic Cooperation and Development and Sequa, Germany January 2022 to December 2023 €220,940	Prof. Nana Yaw Asabere
Curriculum Co-development for integrating MOOCs in Engineering Education	Electrical/Electronic Engineering	Carnegie African Diaspora Fellowship Program, Fall 2020 Grant January 2020 to August 2021 $25,000	Prof. Amevi Acakpovi
Business and Management Studies Curriculum Review and Research Capacity Building	Electrical/Electronic Engineering	Carnegie African Diaspora Fellowship Program, Fall 2020 Grant. January 2020 to August 2021 $25,000	Prof. Amevi Acakpovi
Empowering Technicians with Skills in Programming, Wiring and Troubleshooting PLCs Through a Well Designed Learning Management System (LMS)	Electrical/Electronic Engineering	Ghana Skills Development Fund June 2018 to October 2020 $99,996.10 (USD)	Prof. Amevi Acakpovi

MAJOR PROJECT FUNDING AND GRANT PARTNERS





ATU RESEARCH AND INNOVATION FUND (ARIF)

The first call for ARIF (2020) was launched in February 2020 by the Vice-Chancellor, with the core mandate of enhancing multidisciplinary, action-based research to contribute towards building the necessary technical and vocational capacity for the development of Ghana and Africa at large.

The establishment of the fund was driven by the desire of ATU to contribute to the reduction of poverty and the improvement of the livelihoods of Ghanaians. Currently, the total amount for ARIF is Gh₵ 20,000 for a period of one academic year. As shown on the next page, four (4) ARIF projects have been completed (two in ARIF 2020 and two in ARIF 2021), and the rest are currently ongoing.

ARIF 2020 RESEARCH PROJECTS



Project Title 1: Classification of Public Health Centres in Accra through a Web-Based Portal Integrated with Geographical Information System (GIS).

Grant ID: ARIF-2020-03

Investigators: Prof. Nana Yaw Asabere[1] (PI), Gare Lawson[1, 2], Godwin Badu-Marfo[2, 3], Lydia Kwofie[1]

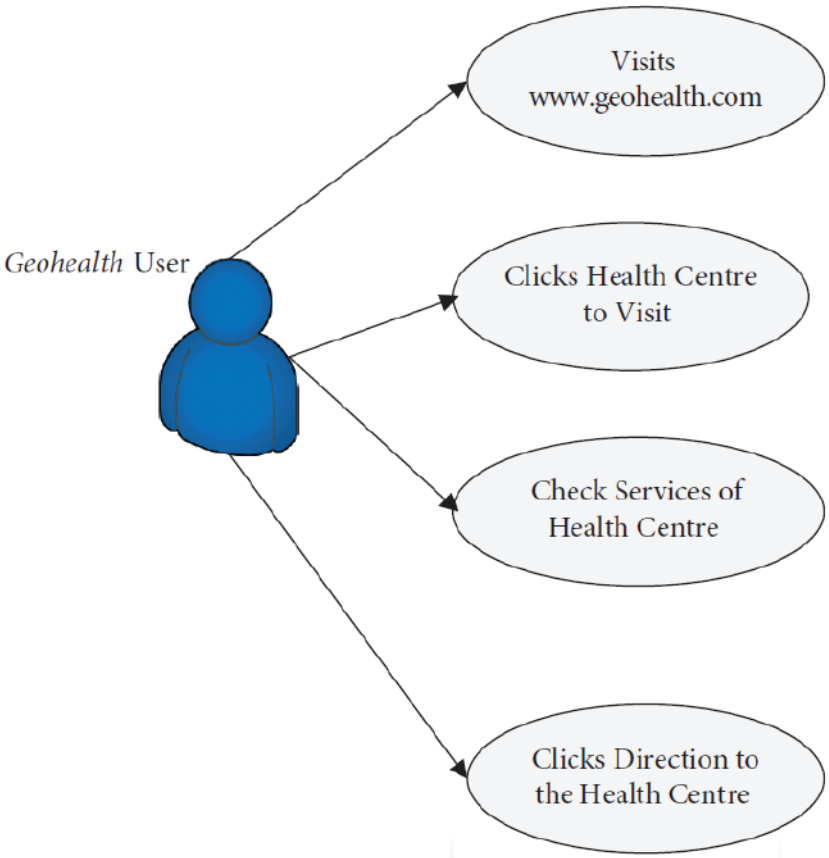
Daniel Opoku Mensah[2] and Reginald Lartey[1]

[1]Department of Computer Science, Faculty of Applied Sciences, Accra Technical University (ATU)
[2]DexAfrica Limited, Accra, Ghana
[3]Department of Geography Urban Planning and Environmental Studies, Concordia University, Montreal, Canada

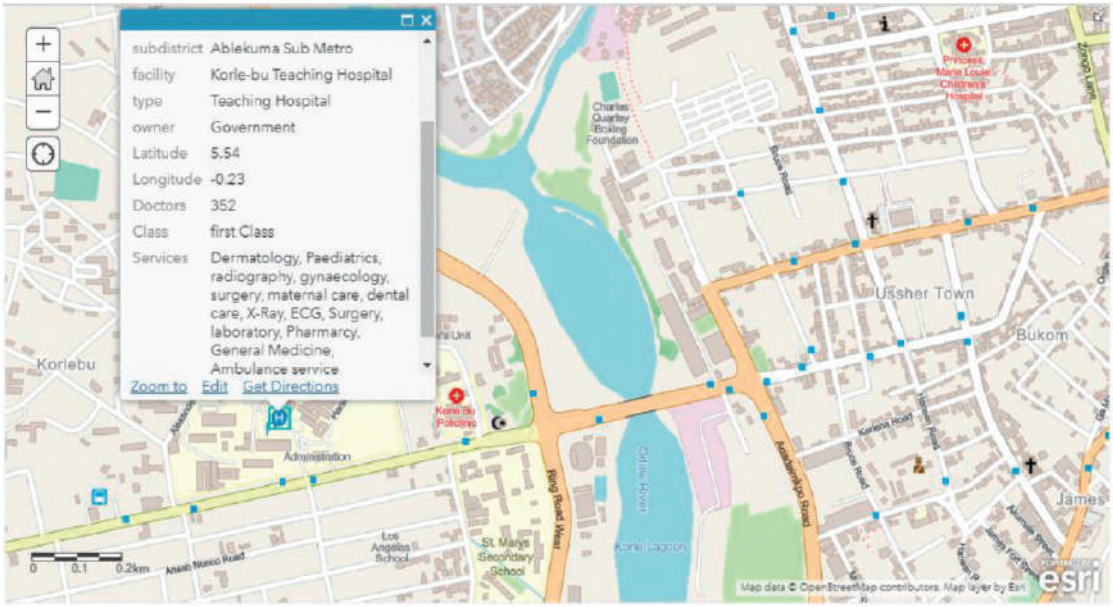
Project Status (Completed, Publication Available at https://doi.org/10.1155/2021/4178161, Software Product Available)

A health system is described as a logically organized collection of resources, agents, and institutions that offer healthcare to a specific population based on finance, regulation, and delivery of health services. Many health centres have been established in Accra, the capital city of Ghana, due to the importance of good health. People in other developed nations can seek adequate healthcare, since information about relevant health centres is readily available. However, there is a paucity of information about the services provided by existing health institutions in Ghana, particularly in Accra. The majority of patients commute to either Korle-Bu Teaching Hospital or Greater Accra Regional Hospital, putting a considerable medical strain on these facilities.

In thisstudy, we utilized Geographic Information System (GIS) to establish a database for all of Accra's health centres and categorized them according to the services they provide. This research tackled the previously mentioned problem by proposing and developing a web-based map called Geohealth for the classification of public health centres in Accra using GIS to assist users in accessing information and locating health centres. We utilized a mixed-method approach consisting of quantitative as well as Build Computer Science Research Methods. Results of our study show that the majority of the participants and stakeholders in our research are eager to embrace Geohealth. Furthermore, in comparison with existing techniques such as Google Maps, our proposed approach, Geohealth, takes less time to obtain information and locate public health centres in Accra, Ghana



Use case diagram of Geohealth.



Geohealth information on KBTH.

Hindawi
Journal of Healthcare Engineering
Volume 2021, Article ID 4178161, 13 pages
https://doi.org/10.1155/2021/4178161

Research Article

Classification of Public Health Centres in Accra through a Web-Based Portal Integrated with Geographical Information System (GIS)

Nana Yaw Asabere,[1] **Gare Lawson**,[1,2] **Godwin Badu-Marfo**,[2,3] **Lydia Kwofie**,[1] **Daniel Opoku Mensah**,[2] **and Reginald Lartey**[1]

[1]*Department of Computer Science, Faculty of Applied Sciences, Accra Technical University (ATU), Accra, Ghana*
[2]*DexAfrica Limited, Accra, Ghana*
[3]*Department of Geography Urban Planning and Environmental Studies, Concordia University, Montreal, Canada*

Correspondence should be addressed to Nana Yaw Asabere; yawasabere2005@yahoo.com

Received 30 September 2021; Accepted 18 November 2021; Published 3 December 2021

Academic Editor: Khairunnisa Hasikin

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A health system is described as a logically organized collection of resources, agents, and institutions that offer healthcare to a specific population based on the finance, regulation, and delivery of health services. Many health centres have been established in Accra, the capital city of Ghana, due to the importance of good health. People in other developed nations can seek adequate healthcare, since information about relevant health centres is readily available. However, there is a paucity of information about the services provided by existing health institutions in Ghana, particularly in Accra. The majority of patients commute to either Korle-Bu Teaching Hospital or Greater Accra Regional Hospital, putting a considerable medical strain on these facilities. In this study, we use a Geographic Information System (GIS) to establish a database for all of Accra's health centres and categorize them according to the services they provide. This research tackled the previously mentioned problem by proposing and developing a web-based map called *Geohealth* for the classification of public health centres in Accra using GIS to assist users in accessing information and locating health centres. We utilized a mixed-method approach consisting of quantitative as well as Build Computer Science Research Methods. Results of our study show that the majority of the participants and stakeholders in our research are eager to embrace *Geohealth*. Furthermore, in comparison with existing techniques such as Google Maps, our proposed approach, *Geohealth*, takes less time to obtain information and locate public health centres in Accra, Ghana.



Project Title 2: Characterization of Tropical Hard Rock Aquifers Using Ambient Borehole Dilution Testing.

Grant ID: ARIF-2020-01

Investigators: Dr. Prodeo Yao Agbotui[1] (PI), Anthony Woode[1], Bright Aforla[1], Mark Brookman-Amissah[2], and Anthony Ewusi[3]

[1]Department of Civil Engineering, Faculty of Engineering, Accra Technical University (ATU)

[2]Department of Building, Faculty of Built Environment, Accra Technical University (ATU)

[3]Department of Geological Engineering, Faculty of Mining and Mineral Resource Technology, University of Mines & Technology, Tarkwa.

Project Status (Completed – Publication in Press)

Project Summary:

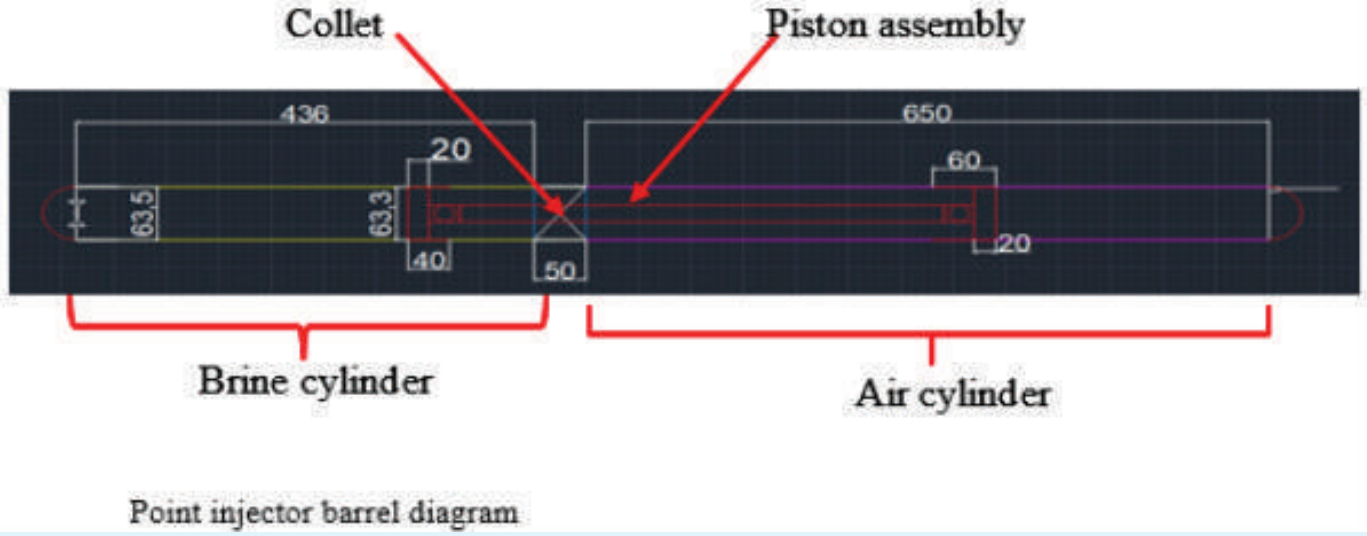
This project verified whether it is possible to use borehole dilution testing to constrain flow features in tropical hard rock aquifers as pertains in other fractured rock terrains. The borehole dilution method is based on the inference of flow features from the dilution and washout of injected tracer into a borehole water column. This project is expected to aid in the development of hydrogeological conceptual models that will feed into numerical models for guiding groundwater Management and protection policies. Furthermore, this work will be important for:

(i) characterizing flow variation with depth and vertical head gradients for the development of conceptual and numerical groundwater models

(ii) demonstrating the utility, novelty and promise of the borehole dilution tests in characterizing tropical aquifers since it is the first time it will be deployed in Ghana and the West African sub-region for characterizing aquifers.



Dr. Prodeo Yao Agbotui1 collecting field data for the research project



Point injector barrel diagram



Project Title 3: Myceliation of Tiger nut, Cocoa and African Locust Beans with Medicinal Mushrooms for Enhanced Nutritional Profile Towards Development of Functional Health Food.

Grant ID: ARIF-2020-02

Investigators: Gideon Adotey[1] (PI), Rev. Abraham Quarcoo[1], Ahmed Gedel[1]

[1]Department of Science Laboratory Technology, Applied Sciences, Accra Technical University (ATU)

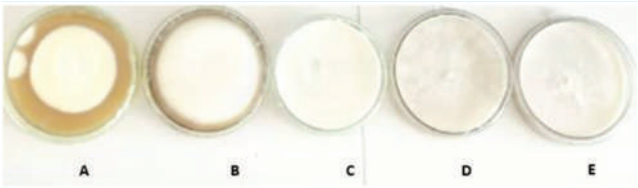
Project Status (Ongoing – Phase 2)

Project Summary:

This project started with reactivation of Cordyceps militaris, Cordyceps sinensis, Ganodermaenigmaticum, Ganoderma resinaceum and Ganoderma weberianum cultures (See Figures Below). These local Ghanaian Ganoderma isolates, characterized earlier by LC/MS-based metabolomics, have been found to contain secondary metabolites known be associated with remarkable biological activities, thus justifying their use in this research. In order to reactivate the above mushroom cultures, a solid medium of Malt Extract Agar (MEA) was prepared in a petri plate and a small piece of mycelium from the cultures was placed on the MEA and incubated in the dark at 28 °C for 10 days. The resulting healthy pure mycelium was transferred to MEA prepared in a microbox (Combinessnv, Belgium) and cultured for another 10 days to obtain pure fungal culture for spawn (seed) production. Subsequently, mineral composition of the myceliated African Locust Beans will be analyzed by instrumental neutron activation analysis (INAA) and Energy Dispersive X-ray Fluoresce (EDXRF) Spectroscopy at Ghana Atomic Energy Commission and Antioxidant Activities by DPPH and ABTS at ATU and Noguchi. The myceliation of Tiger nut and green cocoa beans will be performed and the myceliated product subjected to the above analysis.



Tissue Reactivation Under Horizontal Laminar Flow Hood in ATU Biochemistry Lab 2



Reactivated Healthy Pure Mycelium Culture Growing on Malt Extract Agar on a Petri-dish. A: *Cordyceps militaris; B: Cordyceps sinensis; C: Ganoderma enigmaticum; D: Ganoderma resinaceum and E: Ganoderma weberianum*



Project Title 4: Development of Garment Size Chart for Ghanaian school children using Anthropometric Statistics for Production Management Strategies.

Grant ID: ARIF-2020-04

Investigators: Dr. Vivian Biney-Aidoo[1] (PI), Eunice Antiaye[2], Osei Anwti[3], Afi Nyarko[2], and Ben Otu Ankrah[3]

[1]Department of Fashion Design and Textiles, Faculty of Applied Arts, Accra Technical University (ATU)

[2]Department of Management and Public Administration, Faculty of Business, Accra Technical University (ATU)

[3]Department of Applied Mathematics and Statistics, Faculty of Applied Sciences, Accra Technical University (ATU)

[4]Alfie Designs, North Kaneshie, Accra

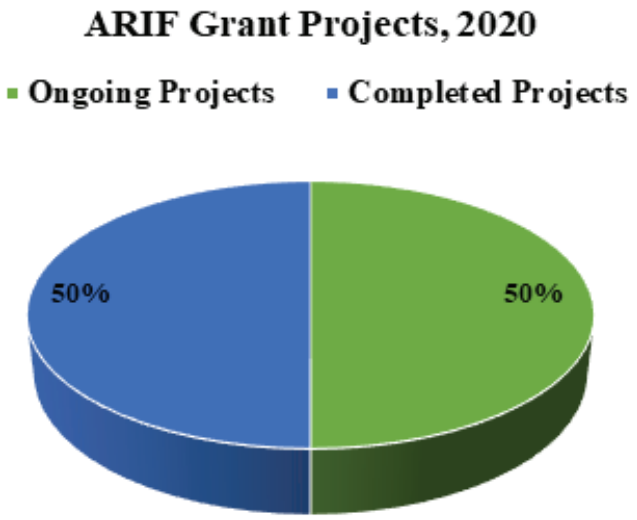
[5]BC Lines, Amasaman, Accra

Project Status (Ongoing – Phase 2)

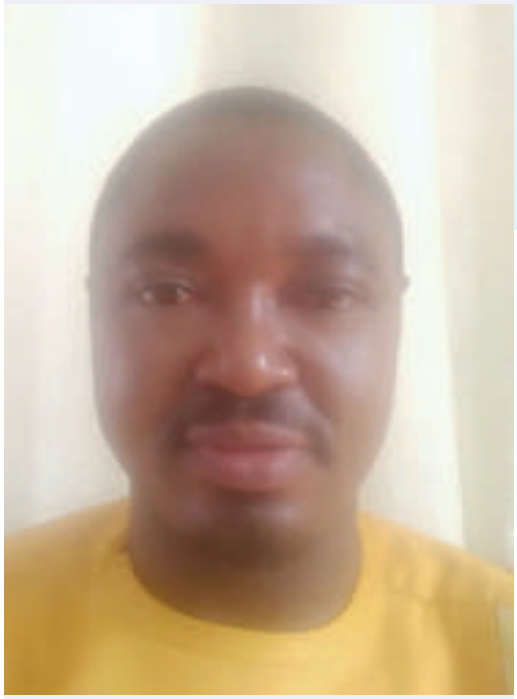
Project Summary:

Anthropometric surveys have indicated that body sizes differ among consumers of different countries, ethnicities, age, and gender leading to fit problems in clothing. The use of anthropometric statistics to develop size charts in various countries have contributed significantly to clothing fit satisfaction of the populations studied. Accurate fit is a very crucial aspect of children's growth and body development, due to the rapid physical changes during childhood. In addition, children spend a huge percentage of their developing years in school and therefore require the provision of good-fitting school uniforms. Preliminary investigations revealed the use of, and a combination of a variety of foreign-based size charts for the manufacture of garments for Ghanaian children, resulting in non-standardized sizes and poor fit.

Although anthropometric surveys have been conducted for the development of sizing systems for children, most research have almost exclusively focused on children in Western countries, with very little surveys in Africa including Ghana. The provision of a standard size chart based on the anthropometric statistics of Ghanaian children would facilitate garment manufacture and enhance fit of school uniforms produced. This study therefore seeks to develop a garment size chart for Ghanaian basic school children using anthropometric statistics.



ARIF 2021 RESEARCH PROJECTS



Project Title 1: Bioactive Profile of Sorghum Bicolor Leaf Sheath Carbohydrate Extract and Ganoderma-Metabolized Carbohydrate Extract Products: Antioxidant, Anticancer and Anti-Inflammatory Activities.

Grant ID: ARIF-2021-03

Investigators: Bright Kojo Azumah[1] (PI), Francis Ofosu-Koranteng[2], and Maxwell Mamfe Sakyiamah[3].

[1]Department of Science Laboratory Technology, Faculty of Applied Sciences, Accra Technical University (ATU)
[2]Pesticide Residue Analysis Laboratory, Ghana Standard Authority
[3]Phytochemistry, Mampong Center for Plant Medicine

Project Status (Completed – Beverage Drink Product Available, Publication in Press)

Sorghum bicolor leaf sheath is used in folklore as a food dye and in treating anemia. Recent studies have shown that the phytochemical constituents of the leaf sheath have antioxidant, anticancer and immune modulatory activities. In this study, we determined the antioxidant, anticancer and anti-inflammatory activities of the carbohydrate fraction of sorghum bicolor leaf sheath and its Ganoderma-metabolized products, and formulated a drink using the leaf sheath as an ingredient. Pulverized leaf sheaths were defatted and deproteinized using alcohol under soxhlet extraction (70 ºC, 4 h) to produce dry crude carbohydrate fraction. The autoclaved (121 ºC, 15 min) carbohydrate residue (70% moisture) was myceliated with G. resinaceum and incubated (35 ºC, 70% humidity) for 20 days. Pure carbohydrate fractions from both the myceliated and unmyceliated crude carbohydrate residues were produced by DEAE-52 Cellulose ion-exchange and Sephadex G-100 gel filtration chromatography. The characteristic carbohydrate functional groups were confirmed by 1H-13C NMR and FTIR spectroscopy. The 1H and 13C NMR spectra of DFUP-1 showed the presence of β-glycosidic linkages, and a substitution at C6 of the sugars which may be O-methyl substitution or due to β (1-6) linkages. Peaks for α-anomeric linkages were not detected. The FTIR spectrum of DFUP-1 confirmed its carbohydrate functional groups, showing stretches at 3,178.88 cm-1 (-OH), 2941.64 cm-1 (-CH3) and 1136.58 cm-1 (C-O). The anti-inflammatory activities of the isolates were preliminarily determined using the egg-denaturation assay. The unmyceliated carbohydrate isolate showed anti-inflammatory activity with IC50 of 1.040 mg/ml compared to the Ganoderma-myceliated carbohydrate with an IC50 of 1.801 mg/ml and diclofenac with an IC50 of 0.8202 mg/ml. The antioxidant activities of the carbohydrate isolates were determined using the DPPH radical scavenging assay. The unmyceliated carbohydrate showed antioxidant activity with IC50 of 1.020 mg/ml compared to the myceliated carbohydrate fraction with IC50 of 1.310

mg/ml and vitamin C with IC50 of 0.035 mg/ml. The anticancer activities of the carbohydrate isolates were confirmed using the MTT assay against JURKAT cells. The unmyceliated carbohydrate isolate showed anticancer activity with an IC50 of 40.160 mg/ml compared to the myceliated with IC50 of 17.408 mg/ml and curcumin (anticancer agent) with IC50 of 0.984 mg/ml. The sorghum leaf sheath was used as a main ingredient to formulate a drink, trade-named WAKAWAKA, containing ginger, cloves, sugar, pepper and grains of selim. The consumer acceptability of the WAKAWAKA drink was determined by sensory evaluation in comparison to a popular drink made from Hibiscus sabdariffa (sobolo). Using a five-point hedonic scale, WAKAWAKA drink was the most preferred for its aftertaste (p-value < 0.0001), smell, bitterness and sourness, and thus overall preferred to sobolo drink. This study has shown that the myceliation of sorghum leaf sheath carbohydrates may not improve the antioxidant and anti-inflammatory activities of the carbohydrate metabolites but may enhance the anticancer activities. This study has also shown that a beverage drink (WAKAWAKA) made from sorghum leaf sheath may have a higher consumer acceptability than the popular beverage drink made from Hibiscus sabdariffa (sobolo), and thus provide an economic use of the sorghum leaf sheath in the food industry.

Key Findings

1. Determining the antioxidant activity of the carbohydrate fraction of the Sorghum bicolor leaf sheath
   Table 1. The inhibitory concentrations (IC50) of the Ganoderma-myceliated and unmyceliated carbohydrate isolates from sorghum leaf sheath against the formation of free radicals in the DPPH antioxidant assay

Analyte	IC_{50} (mg/ml)
Vitamin C	0.035
Unmyceliated sorghum leaf sheath carbohydrate extract	1.020
myceliated sorghum leaf sheath carbohydrate extract	1.310

Vitamin C served as the reference antioxidant agent. The myceliation of the carbohydrate fraction of the sorghum leaf sheath didn't improve the antioxidant activity.

2. Determining the anti-inflammatory activity of the carbohydrate fraction of the Sorghum bicolor leaf sheath, and the Ganoderma-myceliated carbohydrate extracts
   Table 2. The anti-inflammatory activities (IC50) of the Ganoderma-myceliated and unmyceliated carbohydrate isolates from sorghum leaf sheath against the denaturation of egg albumin in the egg denaturation assay.

Analyte	IC_{50} (mg/ml)
Diclofenac	0.8208
Unmyceliated	1.040
myceliated	1.808

3. Determining the anticancer activity of the carbohydrate fraction of the Sorghum bicolor leaf sheath, and the Ganoderma-myceliated carbohydrate extracts.
Table 3. The anti-proliferative (anti-cancer) activities (IC50) of the Ganoderma-myceliated and unmyceliated carbohydrate isolates from sorghum leaf sheath against the JURKAT cells (cancer cells) in the MTT assay.

Analyte	IC_{50} (mg/ml)
Curcumin	0.984451
Unmyceliated	40.15991
myceliated	17.40795

Curcumin served as the reference anti-cancer agent. The ganoderma-myceliation of the carbohydrate isolate from the sorghum leaf sheath improved the anti-proliferative activity against the JURKAT cancer cells.

4. Producing a beverage drink from the sorghum bicolor leaf sheath.
Sorghum leaf sheath (82.28g), ginger (75.12g), cloves (25.20g), grains of helim (30.00g) and pepper (20.90g) were added to two (2) liters of water, and boiled for 45 minutes. The hot aqueous extract was collected by sieving through a mesh. Sugar (245g) was added to the hot aqueous extract and stirred. The same procedure and formula was used to prepare "sobolo" drink which had the sorghum leaf sheath substituted by leaves of Hibiscus sabdariffa (sobolo leaves). The chilled drinks were served to 30 participants for sensory evaluation. The results are shown in Figure 1 below. Overall, the sorghum leaf sheath extract drink (WAKAWAKA – see figure 2) was preferred to the Hibiscus sabdariffa leaf extract drink (sobolo).

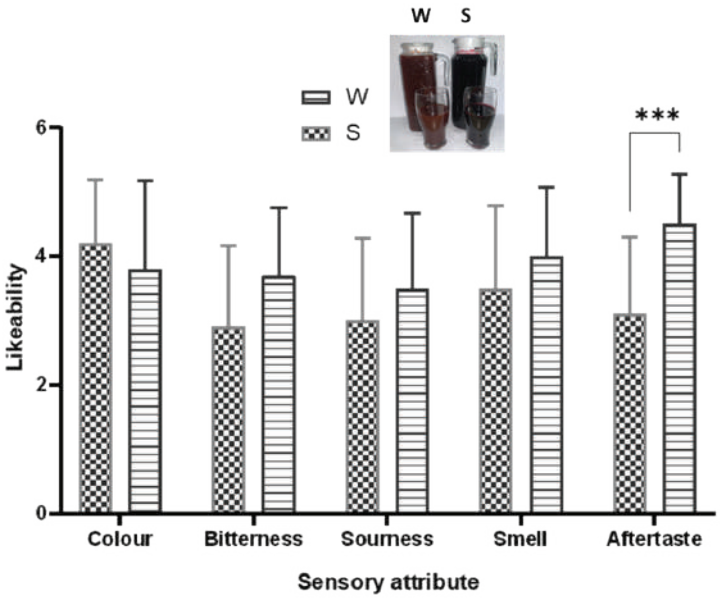


Figure 1. *The outcome of the sensory evaluation of the WAKAWAKA drink in comparison with sobolo drink by a 30-membered panel of evaluators (students [22 males, 8 females]). The WAKAWAKA drink was significantly preferred (p-value < 0.0001) for its aftertaste than sobolo. Overall, the WAKAWAKA drink was preferred over sobolo.*



Figure 2. *The WAKAWAKA drink with its constituent ingredients. The WAKAWAKA drink had a better consumer acceptability than sobolo drink.*



Project Title 2: Improving COVID-19 Contact Tracing in Ghana Through a Computerized Application Integrated with Geographic Information System (GIS).

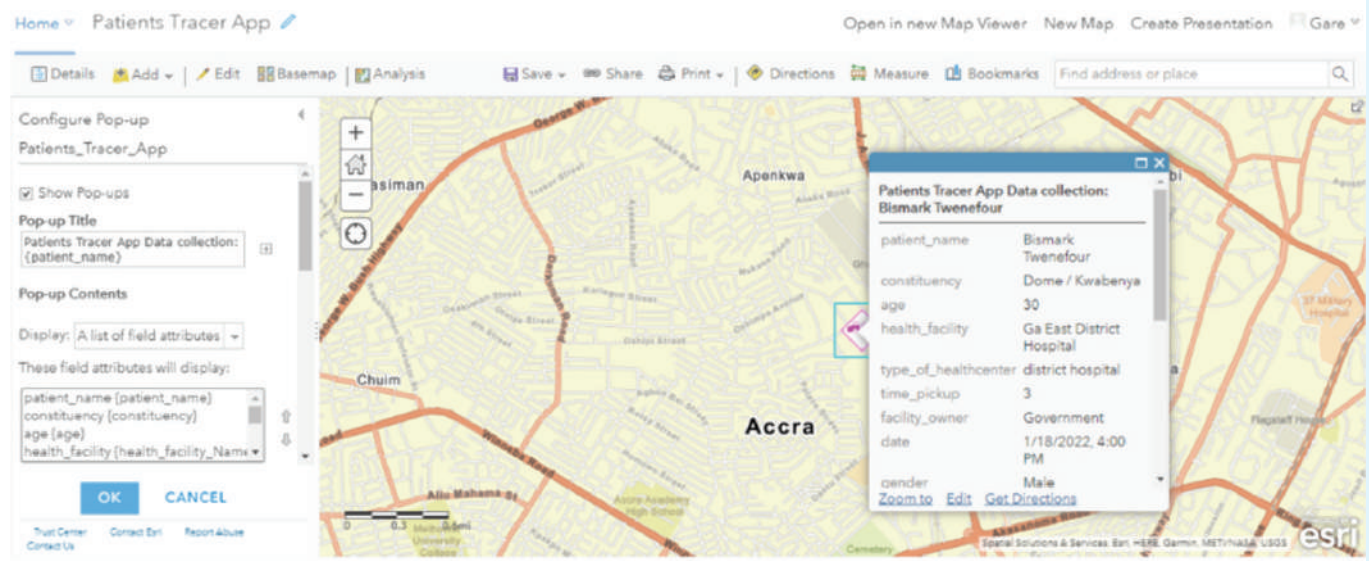
Grant ID: ARIF-2021-04

Investigators: Joseph Eyram Dzata[1] (PI), Gare Lawson[1,2], and Daniel Opoku-Mensah[2].

[1]Department of Computer Science, Faculty of Applied Sciences, Accra Technical University (ATU)
[2]DexAfrica, Accra

Project Status (Completed – Software Product Available, Publication in Press)

The main goal of health data management is to maintain high-quality data for reporting, assessment, analysis, and decision-making. For high-quality data to be obtained, good data management practices are needed. A well-functioning data management system is important in health care delivery because it assures the provision of quality data that can be used to schedule health services and assess the health system's success. For tracking progress toward the Millennium Development Goals 4 and 5, high-quality routine health-system data is critical. The investigators/authors' main goal was to create a digital data collection and patients tracing (app) integrated with GIS for data collection, monitoring, and planning, with the goal of assisting relevant stakeholders and health organizations in Ghana in tracking pertinent issues related to major disease outbreaks and use of the national ambulance service. The developed data collection and patient tracing app aims to provide relevant Ghanaian users with accurate location data of those that have tested positive as well as the population that could be affected. Furthermore, the proposed app would aid in the precise tracing of patients who have contracted any of the diseases as well as others who have come into contact with them.



Computerized patients' tracer platform with assets pop-up.



Project Title 3: Tracer Study of Accra Technical University Graduates.

Grant ID: ARIF-2021-07

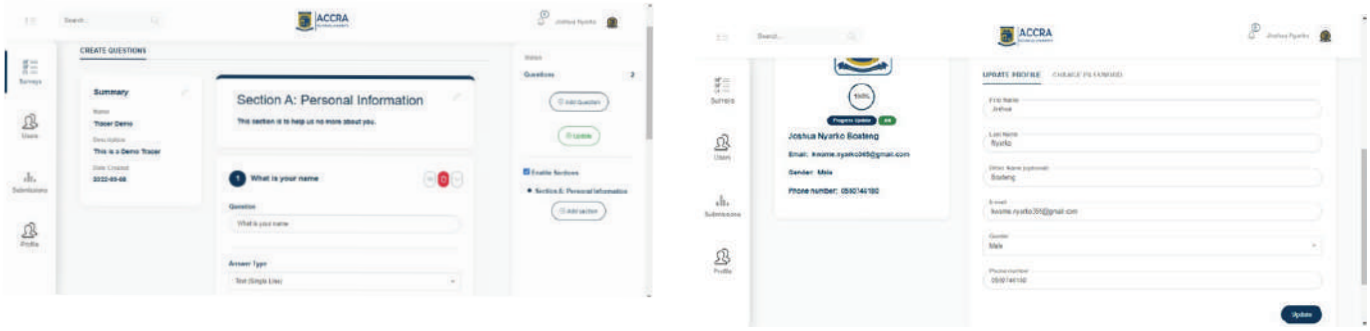
Investigators: Prof. Alice Constance Mensah[1] (PI), Joseph Dadzie[1], Ben Apau-Dadson[1], Joshua Nyarko Boateng[2], and Samuel Kweku-Bio Dzidzornu[1].

[1]Department of Applied Mathematics and Statistics, Faculty of Applied Sciences, Accra Technical University (ATU)
[2] Department of Computer Science, Faculty of Applied Sciences, Accra Technical University (ATU)

Project Status (Completed – Website Available, Publication in Process)

Project Summary: Tracer studies seek to document changes in the lives of graduates of an institution and determine the extent to which the training given during studies has contributed to the changes observed. This study investigated the placement and utilization of graduates of Accra Technical University by their employers as well as effectiveness and efficiency at their place of work. A web application was consequently developed to be used as a tracer database for ATU graduates at the end of their study.

Both descriptive and cross-sectional design will be employed. Two thousand (2,000) BTech and HND graduates are expected to be sampled using convenience and snow-ball techniques. The period for the study is 2010 to 2019. Questionnaires were utilized to gather data and analyzed using STATA. Findings from the study is expected to cause industry players to have confidence in the graduates and help in bridging the skill gap between academia and industry to reduce graduate unemployment in the economy.



User interface of the tracer studies web application



Project Title 4: Development of a Paper Microfluidic Device for Quality Control of Food Products.

Grant ID: ARIF-2021-07

Investigators: Prof. George Osei-Adjei[1] (PI), Lawrence Nugbienyo[2], Andrey Shishov[3], Sergey Garmonov[3], and Andrey Bulatov[3].

[1]Department of Medical Laboratory Technology, Faculty of Applied Sciences, Accra Technical University (ATU)
[2]Department of Science Laboratory Technology, Faculty of Applied Sciences, Accra Technical University (ATU)
[3]Department of Analytical Chemistry, Saint-Petersburg State University, Russia

Project Status (Ongoing – Phase 3)

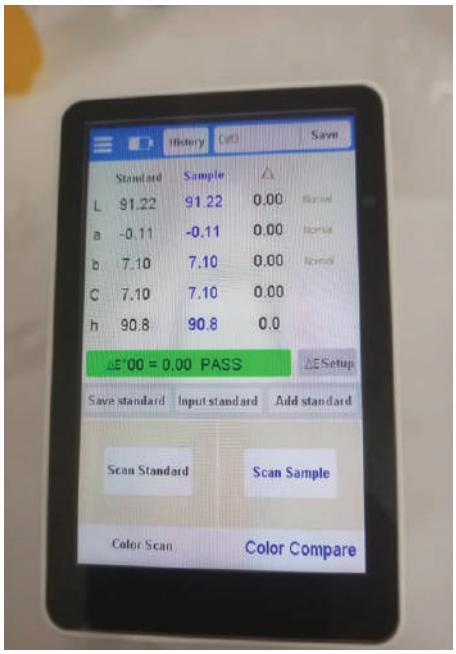
One of the priorities of scientific progress is to ensure well-being, which, in particular, includes the consumption of safe and high-quality foods. At today's level of technology development, food production cannot be imagined without high-quality and express quality control, which includes chemical analysis. In turn, chemical analysis of food is impossible without improving existing and proposing new approaches and methods for its implementation. Thus, it is a relevant task to propose new approaches and methods of modern analytical chemistry in general and, in particular, chemical analysis of food. This consists, primarily, of miniaturization of chemical analysis and its realization without the use of toxic or aggressive solvents and reagents. Food quality control involves chemical analysis, using modern instrumental methods that allow multi-component analysis to be performed. Currently, there is the need to conduct rapid screening of large numbers of samples for operational detection of product falsification. To solve the problem, disposable microfluidic paper devices are becoming common and more useful. The use of natural deep eutectic solvents as environmentally friendly extragents allows the development of new, effective and ecologically safe methods of separation and pre-concentration in food analysis for subsequent colorimetric detection using paper microfluidic devices.



Display of chemical analyses in test tubes

The experimental results obtained for the amount of iron per vitamin tablet are in good agreement with the contents of the tablet as listed on the manufacturer's label. A background absorption was observed at a dilution where 1 mg of iron per tablet was identifiable. The determination of Fe-III in fruit juices was carried out by addition of 0.10% phenanthroline solution and 1 mL acetate buffer (pH 4.25) and recording color profile of the resultant mixture with the colorimeter. The color differences with different concentrations of the reactant were observed to be insignificant. Some results are shown below.







Results from Colour profile testing displayed



Project Title 5: Development of a Nutraceutical Snack from Wild Ghanaian Mushrooms with Anticancer Properties.

Grant ID: ARIF-2021-02

Investigators: Dr. Phyllis Naa Yarley Otu (PI), Jacob Apibilla Ayembilla, and Doreen Dedo Adi.

Department of Science Laboratory Technology, Faculty of Applied Sciences, Accra Technical University (ATU)W

Project Status (Ongoing – Phase 2)

Cancer is a non-communicable disease that is globally causing mortality and morbidity. However, cancer chemotherapy is confronted with drug resistance, toxicity and relapse. Thus, non-toxic and efficacious alternative therapies must be found. In recent times, medical and scientific research in Japan and China have demonstrated the potent therapeutic properties of mushrooms bioactives for the treatment and prevention of cancer. For example, Lentinan, Krestin and Schizophyllan developed from mushrooms are prescription drugs in Japan for treatment of cancer. The ecological reserve of Ghana has vast species of mushroom which are unexplored for medicinal purposes. Our goal is to explore these mushrooms for potent anticancer agents for the development of new anticancer supplements in Ghana.



Close-up shot of wild mushrooms



Close-up shot of wild mushrooms

In this study, Ghanaian wild edible and medicinal mushrooms will be screened for their potent anticancer activities by (1) conducting ethnopharmacological survey to identify edible and medicinal mushrooms in Ghana, (2) evaluate their proximate and mineral composition, (3) determine phytochemical and antioxidant activity of their extracts (4) determine the molecular anticancer activities of the extract and profile the bioactive isolates. The results will provide data for the pharmaceutical industry in the development of new cancer drugs and increase the visibility of ATU through publications.



Project Title 6: Maximizing Consumer Conversion Cycle on E-Commerce Site, Using Machine Learning Techniques.

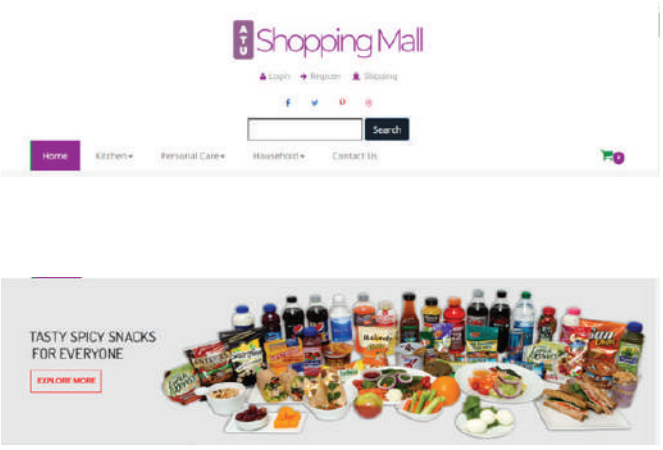
Grant ID: ARIF-2021-05

Investigators: Wisdom Kwawu Torgby[1] (PI), Ernest Christian Winful[2], and Marcellinus Kuuboore[1]

[1]Department of Computer Science, Faculty of Applied Sciences, Accra Technical University (ATU)
[2]Department of Accounting and Finance, Faculty of Business, Accra Technical University (ATU)

Project Status (Ongoing – Phase 2)

Consumer activities on ecommerce websites continue to grow in importance year after year. While interest in e-commerce use has grown exponentially in recent years, the majority of potential customers are unable to find an alternative that meets their preferences for completing the online shopping process. This necessitated the retention of potential consumer interest-based solutions in order to avoid or minimize the lack of interest and sales loss for B2C or C2C businesses. To ensure maximum financial inclusion and optimal participation in interoperable payment systems, stakeholders' interests in terms of provider cost reduction, consumer price reduction, and network effects that improve the customer experience must be leveraged. The focus is to explore ways in which consumers in the banking and mobile money industries can reduce transaction costs. The aim of this study is to evaluate consumers' real-time activity on ecommerce sites and to generate consumer-based shopping intent as well as examine the numerous financial transaction opportunities provided by Ghana's banking and mobile money interoperability. The extracted features from the page view data collected during the visit, along with some session and user information, will be used as the basis for developing a model using machine learning classification methods. Preprocessing and feature selection will be used to ensure the classification methods' performance and scalability. The study will examine Genetic Algorithms, Multi-Layer Perceptron, Decision Trees, and Support Vector Machines in order to determine which techniques have the highest accuracy.



Landing page of prototype ecommerce site



Project Title 7: Development of a Bioactive Flavoured Sorghum Beer

Grant ID: ARIF-2021-06

Investigators: Florence Adwoa Ayirezang (PI), Emmanuel Laryea, and Emmanuel Opoku Antwi.

Department of Science Laboratory Technology, Faculty of Applied Sciences, Accra Technical University (ATU)

Project Status (Ongoing – Phase 2)

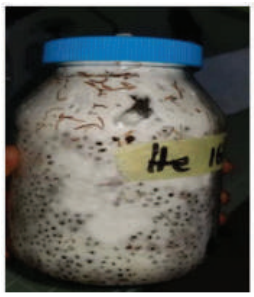
With the increased awareness of eating and drinking healthy, there is an increase demand for bioactive-flavoured pito with improved quality in Ghana. However, the local Ghanaian pito producers lack the technical expertise required for designing such bioactive-flavoured pito drink with improved quality and stability. This study will be sought to produce a novel bioactive flavoured sorghum beer using medicinal mushrooms (Hericium erinaceum, Trametes vesicolor and Cordyceps militaris) and ginger ((Zingiber officinale). To demonstrate that the final pito product has the desired bioactive-flavoured compounds international standard methods will be employed; mineral composition analysis will be conducted by instrumental neutron activation analysis and functional components (ascorbic acid, polyphenolics, and flavonoids) analysis will be conducted using metabolomics approach per our research. The antioxidant activity will be evaluated by DPPH and ABTS assays and anticancer effects will be investigated by MTT assay while the health anti-inflammatory activity will be investigated using LPS-induced macrophage approach. Also, the physicochemical properties will be evaluated. At the end of this study, we expect to contribute with evidence of enhancing the bioactive attributes and quality of pito produced.



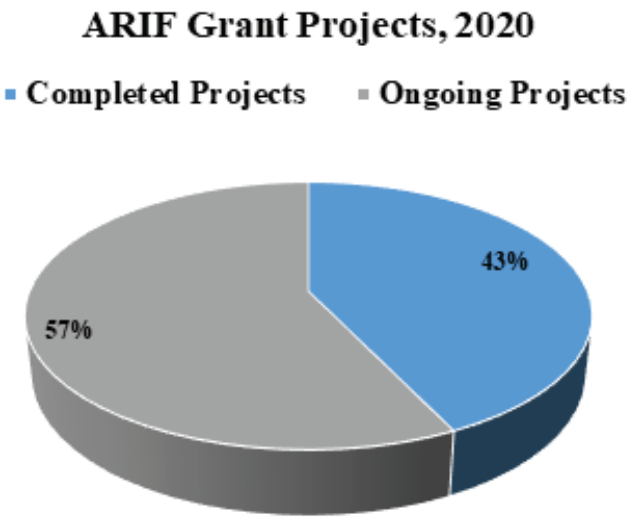
soaking of sorghum grains



Germination of sorghum grains in a hydroponic tray



Culturing of Hericium Erinaceus on Malted Sorghum in an Airtight Micro Bowl

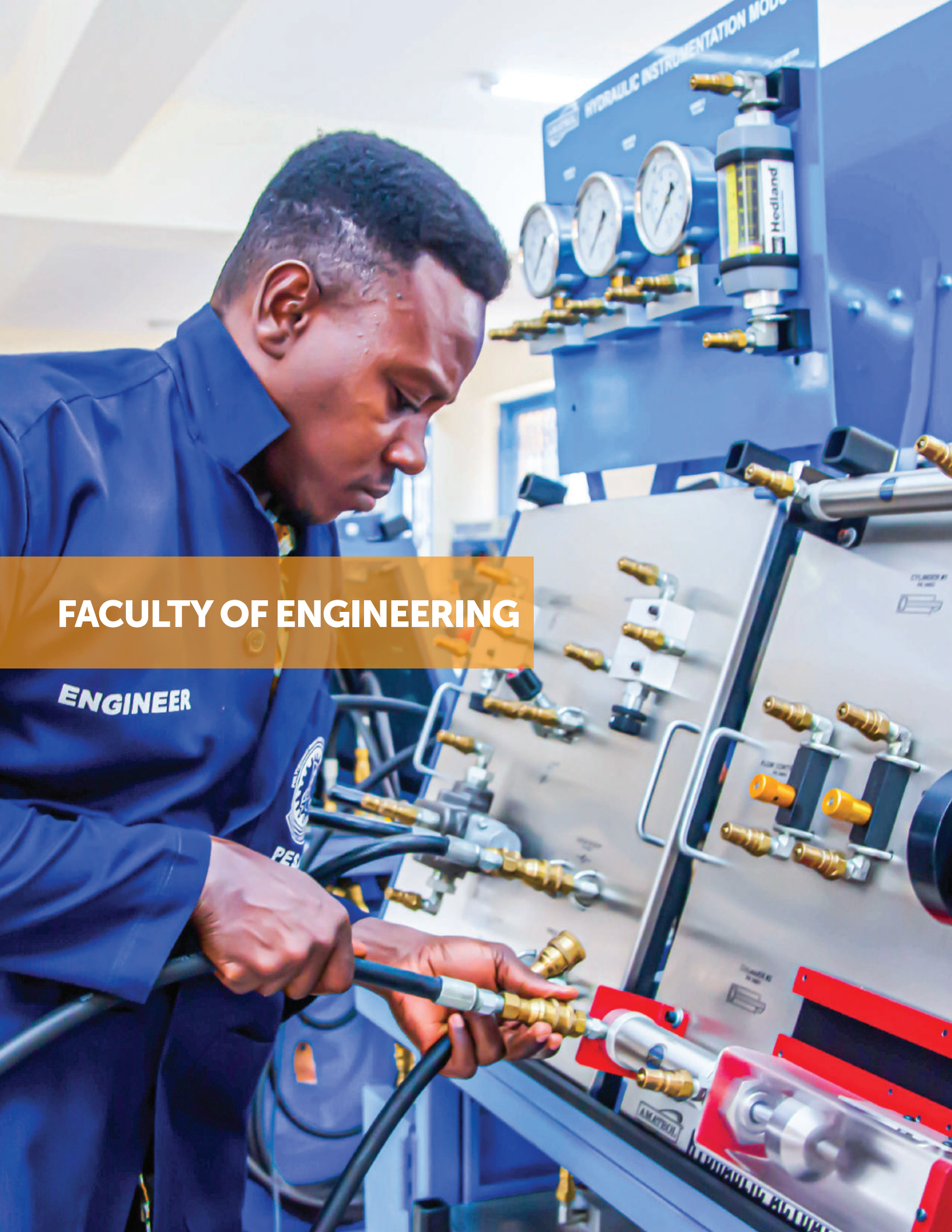


ARIF 2020 AT A GLANCE

Title of Project	Department	Donor	PI
Classification of Public Health Centres in Accra Through a Web-Based Portal Integrated With Geographical Information System (GIS)	Computer Science	ATU	Prof. Nana Yaw Asabere
Characterization of Tropical Hard Rock Aquifers Using Ambient Borehole Dilution Testing	Civil Engineering	ATU	Dr. Prodeo Yao Agbotui
Enhancing the Nutritional Profile of Ghanaian Tiger Nut, Green Cocoa Beans and Locust Beans ("Dawadawa") Through Myceliation with Edible and Medicinal Mushrooms Towards the Development of Functional Health Products	Science Laboratory Technology (SLT)	ATU	Mr. Gideon Adotey
Development of Garment Size Chart for Ghanaian school children using Anthropometric Statistics for Production Management Strategies	Fashion Design and Textiles	ATU	Dr. (Mrs.) Vivian Biney-Aidoo

ARIF 2021 AT A GLANCE

Title of Project	Department	Donor	PI
Improving Patient's Data Collection and Tracing in Ghana Through a Computerized Application Integrated with Geographic Information System (GIS)	Computer Science	ATU	Mr. Joseph Eyram Dzata
Bioactive Profile of Sorghum Bicolor Leaf Sheath Carbohydrate Extract and Ganoderma-Metabolized Carbohydrate Extract Products: Antioxidant, Anticancer and Anti-Inflammatory Activities	Science Laboratory Technology (SLT)	ATU	Mr. Bright Kojo Azumah
Tracer Study of Accra Technical University Graduates	Science Laboratory Technology (SLT)	ATU	Prof. (Mrs.) Alice C. Mensah
Development of a Paper Microfluidic Device for Quality Control of Food Products	Science Laboratory Technology (SLT)	ATU	Prof. George Osei-Adjei
Maximizing Consumer Conversion Cycle on E-Commerce Site, Using Machine Learning Techniques	Computer Science	ATU	Mr. Wisdom Torgby
Development of a Nutraceutical Snack From Wild Ghanaian Mushrooms With Anticancer Properties	Science Laboratory Technology (SLT)	ATU	Dr. (Mrs.) Phyllis Otu
Development of a Bioactive Flavoured Sorghum Beer	Science Laboratory Technology (SLT)	ATU	Mrs. Florence Ayirezang



FACULTY OF ENGINEERING



Prof. Felix Y.H. Kutsanedzie (PhD)
Dean, Faculty of Engineering

FACULTY OF ENGINEERING

Description of the Faculty of Engineering

The Faculty of Engineering is one of the foremost faculty set to train engineers with hands-on practice cut out for the industry and as well facilitate the developmental agenda in the areas of automobile and machines servicing, fault diagnosis, repairs and maintenance; civil works design and constructions, water and sanitation management systems design and construction; electrical systems design, installation, fault diagnosis, trouble shooting, repairs and maintenance; as well as applications in other allied engineering field.

Composition of Faculty of Engineering

Accra Technical University Faculty of Engineering is currently made up of three (3) departments, namely: Mechanical Engineering, Civil Engineering and Electrical Engineering. These three (3) departments are currently running Higher National Diploma (HND) and Bachelor Technology (BTech) programmes with various options.

Faculty Philosophy

To create world-class graduates well rounded and equipped with the requisite technical skills, as well as critical thinking, and problem-solving skills needed to work as a competent engineers and technocrats with the professional acumen and dexterity to function in industry, consultancy, and as magnates.

Faculty Vision

To be a Faculty of global repute for practical training of world class ranked engineers in multidisciplinary engineering and allied fields.

Faculty Mission

We provide students with practice-oriented and experience laden life transforming to meet the needs of industries on societal, national and global scale versatile as well-rounded engineers, leaders, and entrepreneurs to solve problems in all endeavours.

Objective of the Faculty

The objectives of the Faculty include:

1. Equip trainees with the knowledge and technical skills required to effectively solve industrial, societal, national and global level.
2. Instill in our student skills to manage, maintain, and troubleshoot equipment and machines while adhering to necessary health and safety practices
3. Inculcate in our students the necessary knowledge and skills to engineer robust solutions using skills in artificial intelligence (AI) essentially to solve complex problems.
4. Provide a pathway for progression in education

of Technical and Senior High School graduates in mechanical, electrical, civil and other allied engineering and acceptance into membership of engineering professional bodies;

5. Instill in students with the requisite knowledge and skills to manage new business opportunities in engineering fields to their advantage
6. Equip students with the requisite skills and knowledge of current innovations and disruptive technologies in the 4th Industrial Revolution to confront emerging challenges head-on

Competitive Advantage of the Faculty

The Faculty has the following captured as its strength:

1. A well class Faculty member affiliated to national and international engineering bodies with vast pool of experience garnered through industrial practice on engineering projects
2. Well established linkages with industry to augment and complement the practical training of students as a result of proximity of the Faculty based its location in the capital city of the country
3. Enriched curriculum based on the inputs of industrial captains to correct deficiencies which hitherto would have been left unattended to
4. Well-structured and equipped laboratories and workshops to facilitate and enhance the hands-on learning of students

Future Outlook

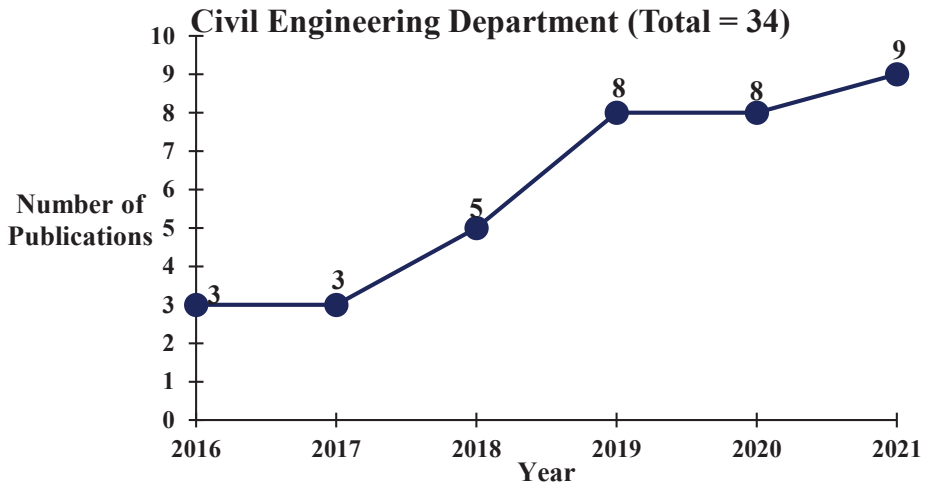
Based Faculty is poised to harness its strengths to attract funding in order to offset the current weaknesses as chronicled above in the not too distant future.

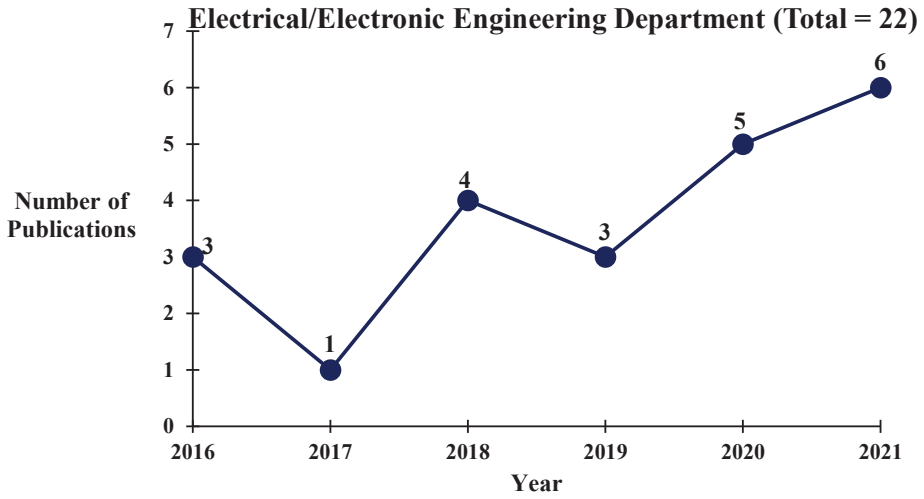
FACULTY OF ENGINEERING

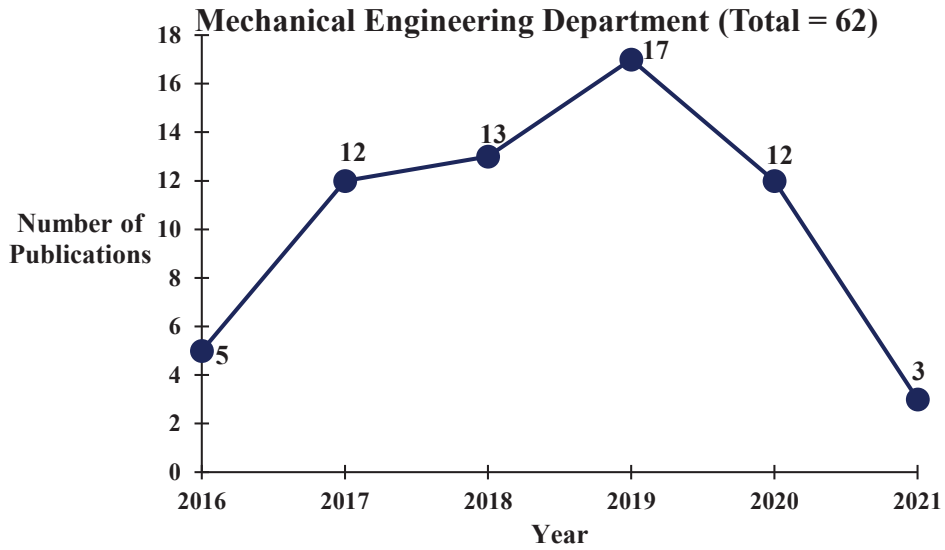
RESEARCH OUTPUTS: PUBLICATIONS (2016-2021)

For the past six (6) years, research publication activities in the Faculty of Engineering in ATU has been highly commendable. Statistics below show that high impact publications are available in all Departments in the Faculty. Further statistics can be verified from Appendix A.

Research Output (Publication) Trends in High Impact Journals and Journals Indexed by Web of Science and Scopus




Electrical/Electronic Engineering Department (Total = 22)
Number of Publications
Year
0
1
2
3
4
5
6
7
2016
2017
2018
2019
2020
2021
3
1
4
3
5
6


Mechanical Engineering Department (Total = 62)
Number of Publications
Year
0
2
4
6
8
10
12
14
16
18
2016
2017
2018
2019
2020
2021
5
12
13
17
12
3

FACULTY OF ENGINEERING - RESEARCH AND TEACHING LABORATORIES

Department of Mechanical Engineering

Mechanical Engineering Department is the foremost departments set up by the University when it was established as a Technical School in 1949. The department combines broad-based teaching and learning in engineering science with a strong inclination to quantitative problem-solving designs with an emphasis on analytical and creative designing methods, and vehicular exploration.

The Mechanical engineering department has re-oriented its curriculum to train students under the department to become international leaders in the Mechanical Engineering profession, industry, research laboratories and academia.

The department provides students with adequate practical and theoretical training and research based mechanical engineering to enable students to flourish and meet the demands of the fast-changing global industrial environment.





Automotive Research Lab – Mechanical Laboratory I





Mechanics of Machines and Strength of Materials Laboratory – Mechanical Laboratory II





Refrigeration and Air-conditioning Teaching Laboratory



Mechanical Machine Workshop – Tudu Campus



Fluid of Mechanics Laboratory – Mechanical Laboratory III





Automobile Teaching Laboratory – Tudu Campus





Refrigeration and Air-conditioning Teaching Laboratory



Technical Drawing Room – Mpehuasem-Samsam Campus



Welding Laboratory – Mpehuasem-Samsam Campus



Mechanical Machine Workshop – Mpehuasem-Samsam Campus





Automobile Maintenance Workshop – Mpehuasem-Samsam Campus

Department of Electrical/Electronic Engineering

Electrical/Electronic Engineering is a multilayered field that teaches systems control, power systems, microelectronics and nanoelectronics, embedded systems and computer networks, wireless communications, telecommunication, etc. The strong demand for electrical engineers in all sectors of the economy makes the programme even more desired. In the department of Electrical/Electronic Engineering, our focus is giving training to students about the concepts and principles of electronics and to bridge the gap between theory and practice to help students excel in their chosen careers.

Students in this department go through rigorous and practical learning in installation and commissioning of industrial equipment, troubleshooting and repairs, and engineering services. Due to the broad nature of the field, students are engaged in a wide range of electrical/electronic engineering projects to employ knowledge from other engineering disciplines in electrical engineering design.



Amatrol Mechatronics Research Laboratory – Tudu Campus









Electrical/Electronic Lab – Mpehuasem-Samsam Campus

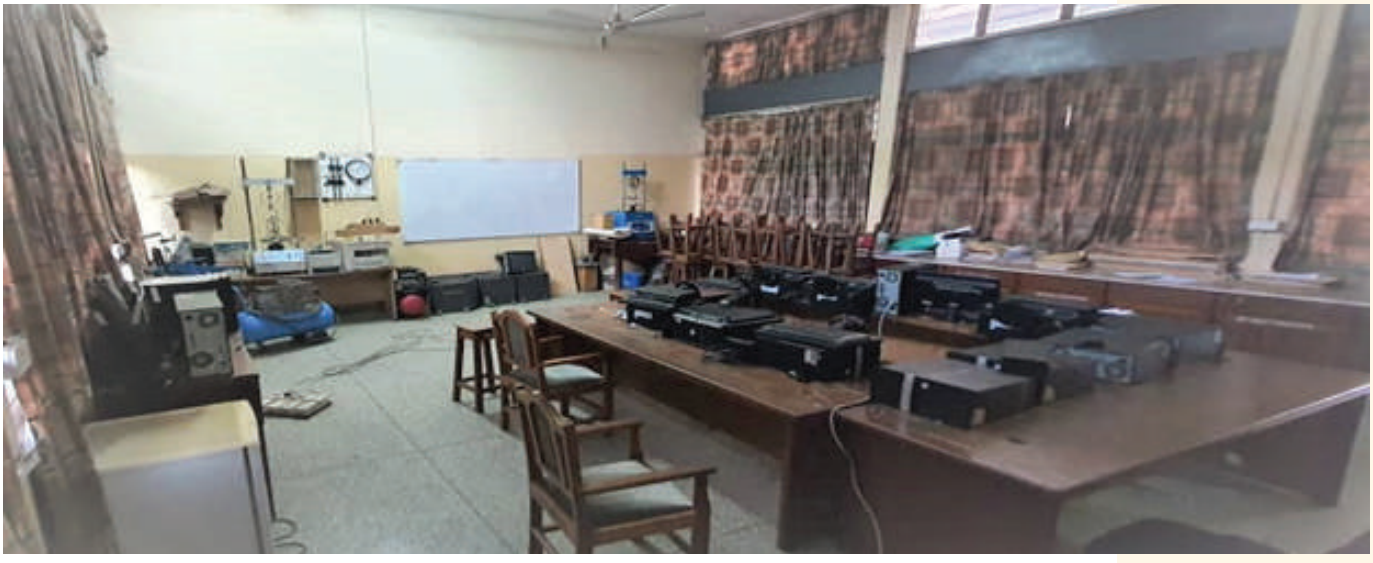
Department of Civil Engineering

The focus of the Civil Engineering programme is to provide theoretical education and practical training to secondary and technical school graduates and to prepare them for the middle-level management and supervisory roles in the civil engineering and construction industry.

The training offers knowledge and skills in specific areas as may apply to the civil engineering industry such as Site inspection, Surveying, Material testing, Contract administration and execution, Structural Analysis and Design, Management of construction activities and the environmental impact, Water Supply and distribution and Environmental Sanitation. Additionally, trainees' entrepreneurial and management skills are also developed in order to encourage them to enter into small scale construction enterprises and to create jobs.



Soil Analysis Laboratory (Civil and Building Technology) – Tudu Campus



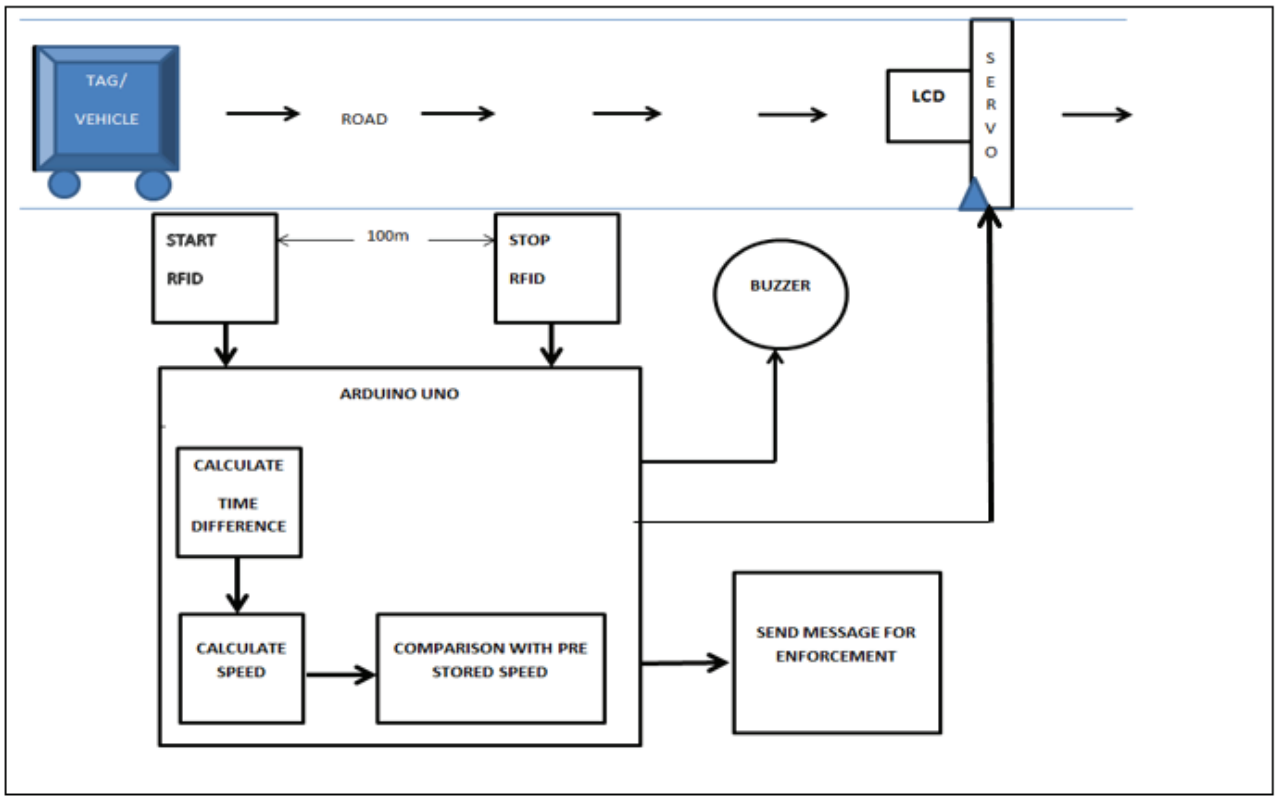
Foundational Laboratory (Civil and Building Technology) – Tudu Campus

FACULTY OF ENGINEERING – NOTABLE/ SELECTED DEPARTMENTAL RESEARCH PROJECTS

Department of Electrical/Electronic Engineering

Project Title 1: RFID-Based Vehicle Speed Monitoring and Enforcement System

The proposed project aims to develop a system that detects cars driving at top speed over specified limit and inform the Authorities in charge of Road safety. Road accidents occurrences have increased recently so there needs to be a system that allows to detect over speeding cars. Current speed detection systems are handheld radar guns held by the road police personnel that allow them to manually check car speed before applying sanctions. Whereas this proposed system does not need, any human intervention and records car speed as well as wirelessly informs authorities of over speeding detections automatically.



System Architecture

The control system would be installed near the vicinity of children playgrounds, hospitals, schools, and on highways where specified road speed limits needs to be observed. The mechanism consists of Radio frequency identification transmitter- receiver pair that work in combination for vehicle detection purpose. A microcontroller is used to process this data and calculate the time required by vehicle to travel from one point to the other. Depending upon this time it now calculates vehicle speed as well as displays this on a screen. The system also sends this data wirelessly to the closest road authorities to take action. It sounds a buzzer alarm if an over speeding vehicle is detected. This integrated speed monitoring and control system would help as a long-term measure for the reduction of speed-related or road traffic crashes, fatalities, and injuries in Ghana.

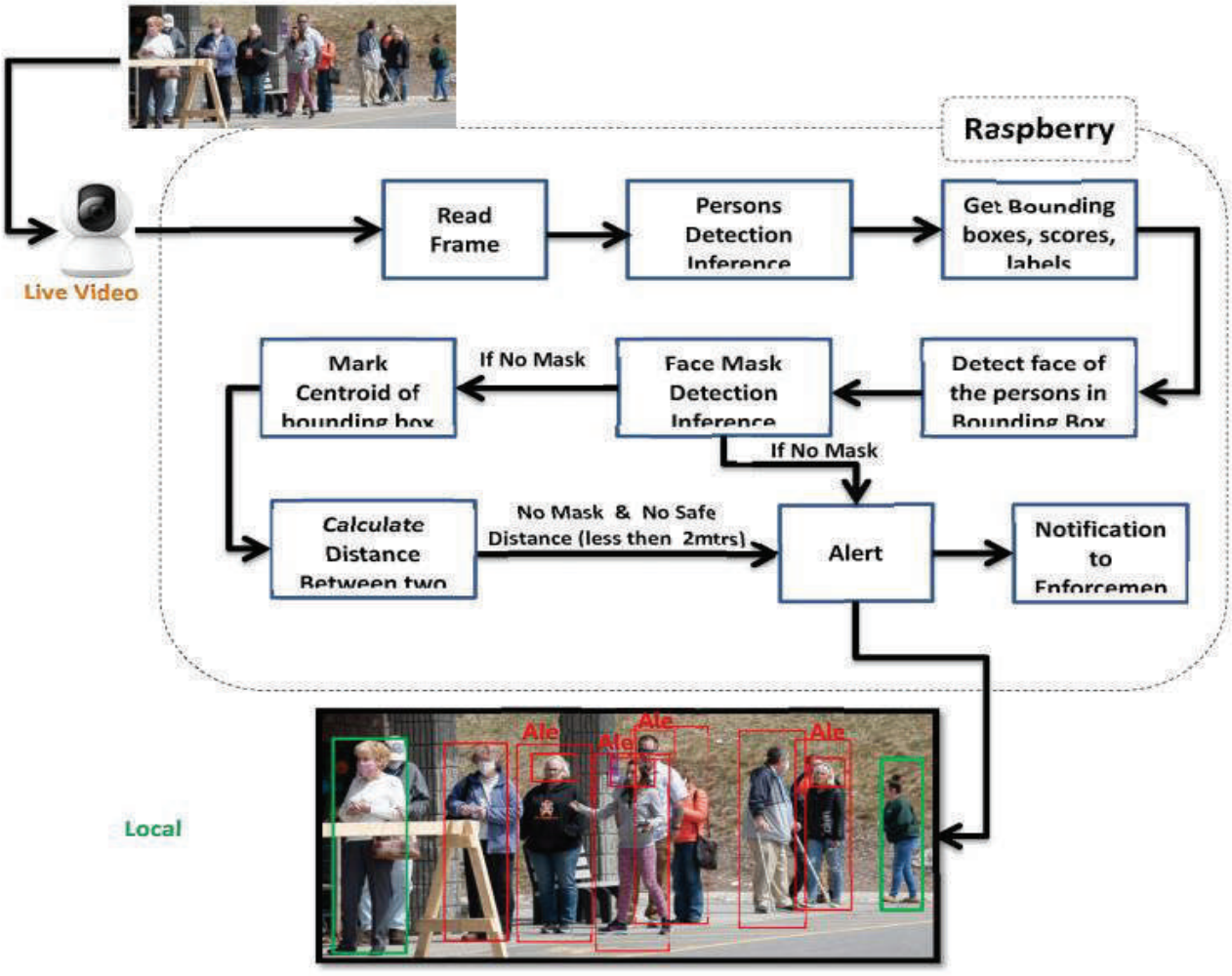
The system flow of this project will be represented in a flowchart form. From the flowchart, it emulates a situation where the start Radio frequency identification (RFID) reader will detect the vehicle every time the vehicle passes through it. Then, the time count will start until the vehicle pass through the stop Radio frequency identification (RFID) reader. The time count will not stop if the vehicle does not pass through the stop Radio frequency identification (RFID) reader. The time difference for a vehicle to pass through two consecutive sensors is calculated. With the calculated time difference and pre-stored constant distance, the speed of the vehicle is calculated. Then, the calculated speed and the pre-stored speed will display on the LCD screen. If the vehicle exceeds the speed limit, the buzzer will sound up and a text message will send to the police to inform them about the speeding violation whilst a servomotor rotates to cross the moving vehicle.

Project Title 2: AI-Based Facemask Detection and Alert System

This project focuses on the design and implementation of a Social Distancing and Face Mask Detection System. This system will implement object detection and facial recognition in the video footages of pedestrians and students in lecture hall. Pre-trained models such as the YOLOv3, ResNet Classifier and DSFD are used. People violating the minimum distance were detected as well as faces without face-masks were detected. An overall results board is displayed in the output containing the number of people violating or non-violating the respective measures. After implementing and deploying the models, this research project achieved a confidence score of 100%. Therefore, this research project concludes with proven facts that social distancing and wearing face masks helps reduce the spread of the virus and thus builds a model to help detect these measures. This model is tested and run-on Raspberry pi model 4 and with the help of OpenCV open-source computer vision library and python.

Methodology

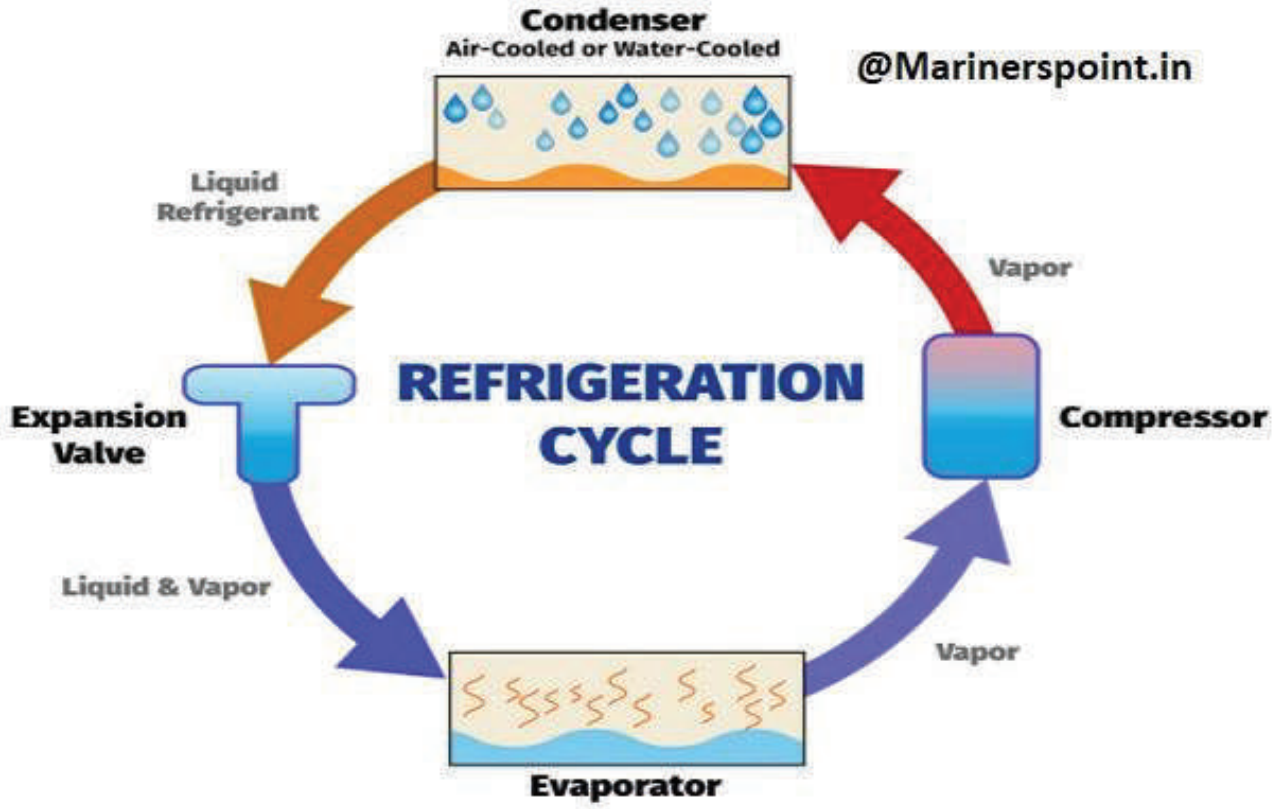
The proposed system uses a custom data set consisting of face images with different types of face masks which are labelled and used for the training of our models. We use the background subtraction algorithm in a pre-processing step. The real-time automated detection of social distance maintenance and the verification of persons wearing masks or not are performed by the yolov3 algorithm. The dataset used to train our proposed face mask detector consists of eighty (80) images. These images are taken from B. Tech Electrical class. Before the custom face mask image dataset is labelled, the dataset is divided into the training data set and the testing dataset. The training data set consist of 80% images to train the algorithm effectively and for prediction accuracy and the test dataset consist of 20% images to test the prediction accuracy of the algorithm. The images in the training data collection are classified into two categories: mask and no mask.


Raspberry
Live Video
Read Frame
Persons Detection Inference
Get Bounding boxes, scores, labels
Detect face of the persons in Bounding Box
Face Mask Detection Inference
If No Mask
Mark Centroid of bounding box
If No Mask
Calculate Distance Between two
No Mask & No Safe Distance (less then 2mtrs)
Alert
Notification to Enforcemen
Local

Flow Chart

Project 1: Experiment on LPG Refrigeration and Comparative Energy Analysis With a Domestic Refrigerator

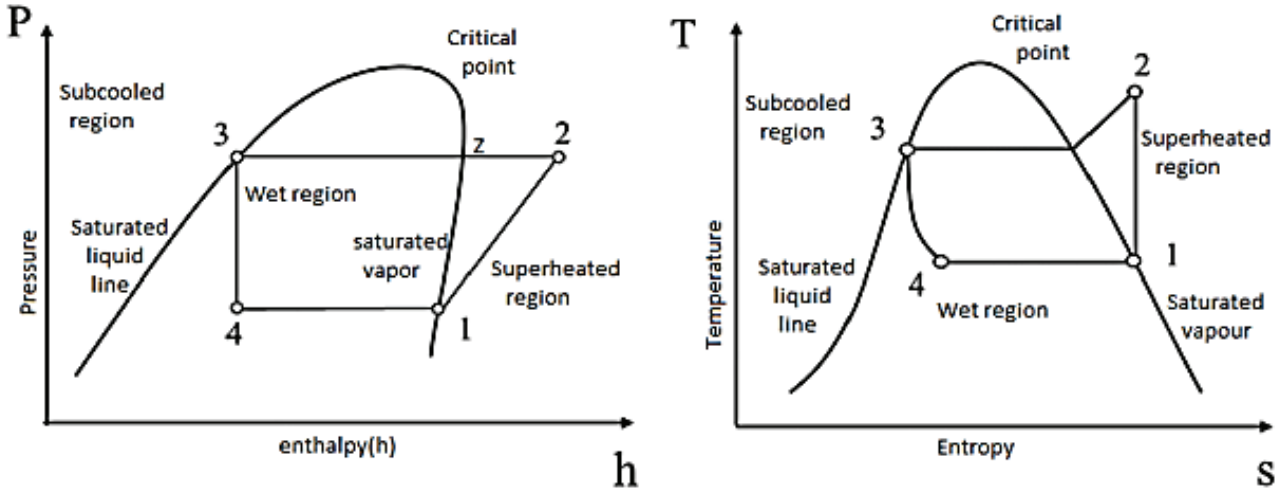
Students: Fiawogbe Addison, James Agbanyo, and Joshua Hammond
Supervisors: Dr. Glenn Gyimah and Miss Patricia Kwakye-Boateng



Schematic Diagram of Vapour Compression System

SYNOPSIS

In many parts of the country and around the world, access to reliably electricity supply is still a huge challenge. This study will be beneficial in such locations for the refrigeration of foodstuffs and medications, for preservation purposes since it does not require electricity for operation. The study examines the findings of an experimental investigation done to ascertain how well a residential refrigerator operates when liquified petroleum gas (LPG) is employed as the refrigerant. Due to its lack of Ozone Depletion Potential (ODP) and low Global Warming Potential, LPG is environmentally friendly. When LPG was utilized as a refrigerant in place of R134a, the refrigerator operated effectively. In the experiment, the compressor and condenser of the vapour compression refrigeration system was replaced with an LPG cylinder. Because the gas in the cylinder is stored at high pressure, no external work is required to impart motion to the gas. The cooling rate of the system depends on the input and output pressures. Although the LPG produces refrigerating effect, the system is not suitable for domestic applications due to the high cost of LPG and the fact that the gas cannot be circulated in the system to form a closed loop system.



T-S and P-H Diagrams of the VCR System

Project 2: Design, Modification and Simulation of Industrial Filtration System Using a Magnet and Metallic Particle Sensor

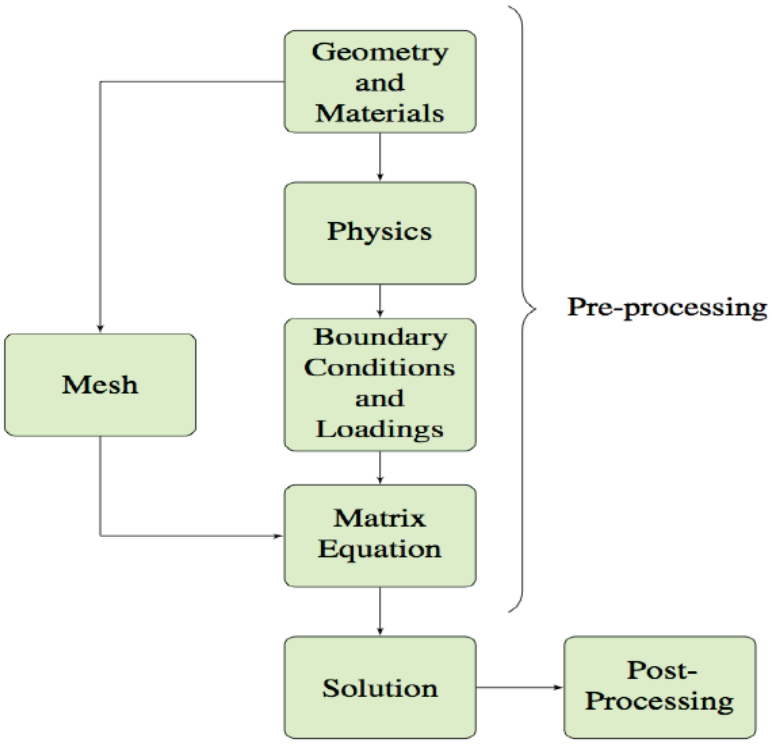
Students: Francis Sagoe, Melchizedek N. Danquah, and Memuna Zakari Baweni

Supervisor: Mr. Emmanuel Kabu Oman

SYNOPSIS

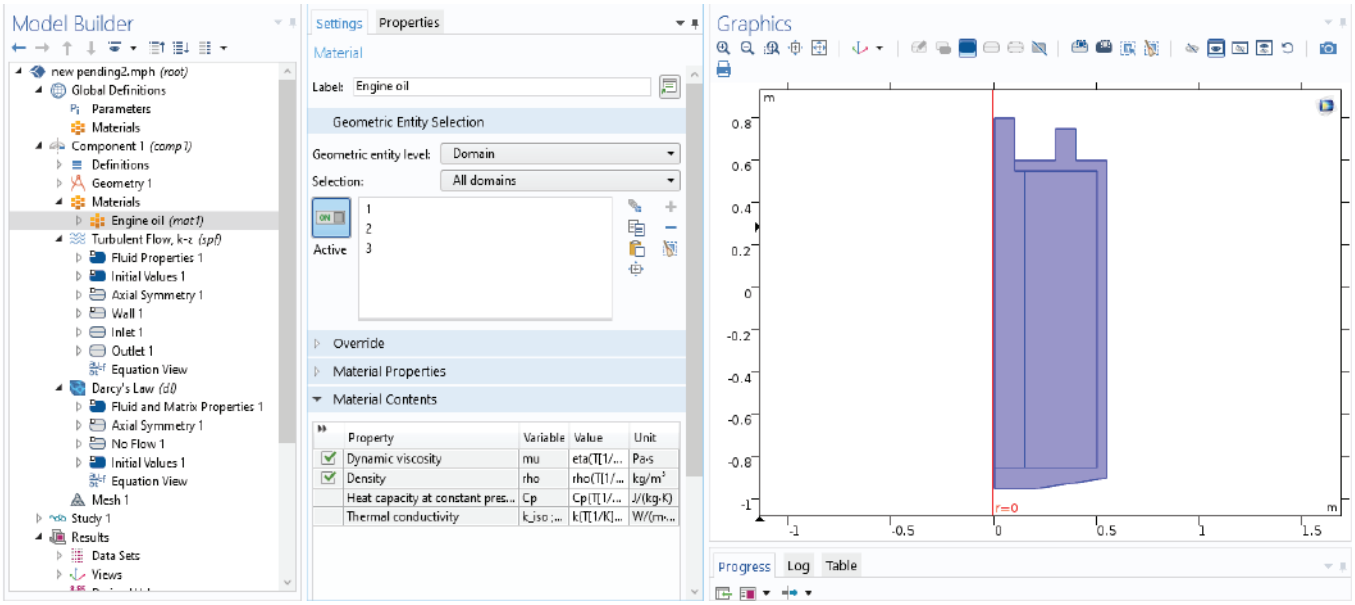
For the purpose of this work, a simple and concise model of a cartridge type filter model was designed using the COMSOL Software to demonstrate the simulation process and understand the principles behind this work. The main objective of this project is to understand the effect of magnetic field on an engine oil fluid as it travels through the oil filter when the oil filter subjected to a permanent magnet to aid in the arrest or the attraction of a tiny ferrous materials in the oil as a result of wear occurrences in the engine or the compressor.

This study was done in two categories; the study without the magnet and with the magnet attached to the outer wall of the oil filter. To better understand this process, a simple model with inlet, filtering medium and the outlet boundaries was clearly shown. According to the software used, the model within the inlet and outlet boundaries domain is the Naiver-Stokes (Laminar flow type) model as the governing equation and the domain for the filtering medium consisting of the tiny pores uses the Darcy's model as the governing equation. The governing equation used for the magnetic model is the Gauss's and Ampere laws. During the study without the magnet. The pressure and velocity of the inlet boundary is made constant (1.4 Mpa and 0.4 m/s respectively) whiles particulate of larger sizes than the diameter of filtering medium pores was injected into the oil and causes blockage in the filtering process. This led to the formation of vortex before the filtration as an indication of pressure build-up due to the particle retention in the filtering medium made of carbon paper. This is to help understand and visualize the relevance of the magnet subjected to the filter and the effect it will have on the fluid.



When the magnet was attached to the oil filter and magnetization values ranging from 1000 Am to 3000 Am was induced with the same constant inlet pressure and velocity, the particulate is attracted, and removed from the pores of the filtering medium, creating space for the fluid to freely flow, thus reducing pressure created as a result of the particle retention. This however, created distortion to the fluid causing ripples and thus creating turbulence to the fluid as the velocity changes unpredictably before exiting out of the filter. At the end, a graph of arrow and streamline showing the direction and the paths of the fluid through the filter. A line graph of the pressure and velocity was also shown. The final results indicate that indeed the magnetic field created somehow have an effect on the flow of the fluid as it attracts the ferrous particulate in the oil in the oil filter.

For the purpose of this works, a simple and concise model of a cartridge type model was designed using the COMSOL Software to demonstrate the simulation process and understand the principles behind this work.



The Interface of the COMOL Software Showing the Material (Engine Oil) Selected for the Design

Project 3: Modification and Construction of a Mobile Corn Shelling Machine

Students: Theophilus Tay, Jerry Senazah, Patrick Mensah, and Richard Sappor Tetteh

Supervisor: Dr. Isaac Asempah

SYNOPSIS

The idea behind the study is to weigh up previous research with the intention of designing and building an electric-powered maize shelling equipment for small-scale farmers. The conventional method of hand-shelling corn or bashing it with a stick takes a lot of work, is time-consuming, hurtful, and has a very poor shelling capacity. To encourage farmers to purchase one for their farms since it is less expensive, the machine was developed and built using materials that were readily available locally. The machine includes larger tires that make it easier to transport to farms where it can be used and a blower to blow the chaffs during shelling.

2.22 kg of dried maize were purchased for the testing, which were used to gauge the machine's performance. Following testing, the machine was found to have a 44.4 kg/hr shelling capacity, a 94.38% efficiency, and a 0.03% loss of grains via the hopper due to the lack of a lid. During the procedure, it was also discovered that chaffs were escaping from the shelling chamber rather than exiting through the chaffs outlet; as a result, the shelling chamber needed to be tightly sealed. In conclusion, if the shortcomings mentioned are corrected, the machine will still work, but it will be more effective.



Assembly Drawing of Component



Construction Images



FACULTY OF BUILT ENVIRONMENT



Mr. Seth E. Allotey
Dean, Faculty of Built Environment

FACULTY OF BUILT ENVIRONMENT

Description of the Faculty of Built Environment

The Faculty of Built Environment is one of the faculties in ATU set to train Building Technologists and Interior Designers with hands-on practice cut out for the industry and as well facilitate the developmental agenda in the areas of construction, building, design technology and upholstery technology.

Composition of Faculty of Built Environment

The Faculty of Built Environment is currently made up of two (2) departments, namely: Building Technology and Interior Design and Upholstery Technology. These two (2) departments are currently running Higher National Diploma (HND) and Bachelor Technology (BTech) programmes with various options.

Faculty Philosophy

To create world-class graduates well rounded and equipped with the requisite technical skills, as well as critical thinking, and problem-solving skills needed to work as a competent building technologists and interior designers with the professional acumen and dexterity to function in industry, consultancy, and as magnates.

Faculty Vision

To be known as a processing Technical University Faculty in Ghana, with a strong international influence.

Faculty Mission

To advance technical knowledge by creating a conducive environment for applied research, quality teaching and competency-based training, with high impact in industry.

Faculty Core Characteristics

The core characteristics of the Faculty is to provide high career-oriented training programmes with emphasis on critical thinking and entrepreneurial skills to students to meet man-power needs of the construction industry in Ghana.

Faculty Core Values

The core values of the Faculty are:

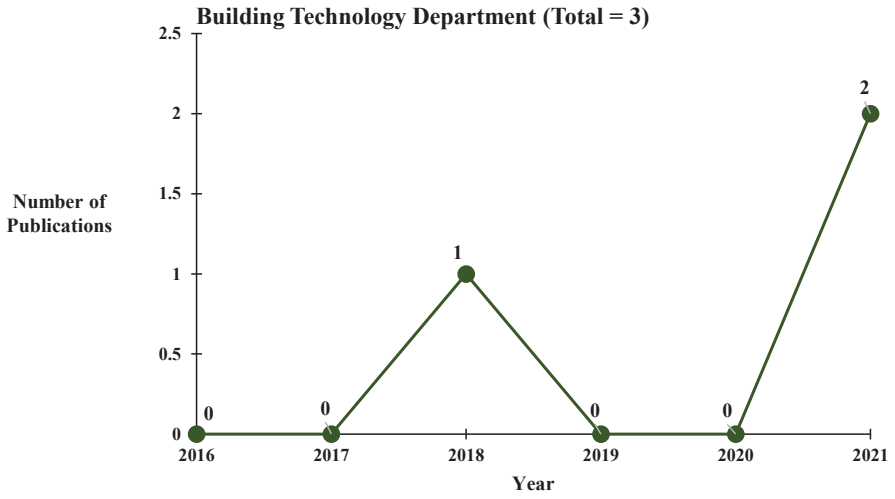
- Creativity
- Leadership
- Professionalism

FACULTY OF BUILT ENVIRONMENT

RESEARCH OUTPUTS: PUBLICATIONS (2016-2021)

For the past six (6) years, research publication activities in the Faculty of Built Environment in ATU has been satisfactory. Statistics below show the trend of high impact publications in one Department in the Faculty. Further statistics can be verified from Appendix A.

Research Output (Publication) Trends in High Impact Journals and Journals Indexed by Web of Science and Scopus



FACULTY OF BUILT ENVIRONMENT - RESEARCH AND TEACHING LABORATORIES

Department of Building Technology

From thatches to skyscrapers, the building industry is shaping the revolution of architectural designs to meet environmental friendliness and artistic impressions. For most town and country planning authorities' knowledge in building technology, it is important to understand and demarcate communities spatially to provide access to vital community needs.

The Department of Building Technology, recognizable by its hands-on approach to understanding building designs, prepares students to meet the building and construction industry's demand for highly technical middle-level managerial personnel. The department is fashioned to help students understand the academic and technical skills in the building and allied industry.

The academic programmes under this department are well structured to integrate building engineering, architectural technologies, and skills to give students the professional training in existing and emerging building technology processes, leading to rewarding careers in the industry. The research and teaching laboratories of the Building Technology Department are the same facility shared with the Civil Engineering Department.

Department of Interior Design and Upholstery Technology

The Department of Interior Design and Upholstery Technology is under the Faculty of Built Environment and runs a programme in HND Interior Design and Technology. It is designed to provide professional careers and technical skills in interior design and related fields in defiance of the usual norm in furniture design. Academic programmes in the department are aimed at producing operational and supervisory-level human resource in Interior Design and Technology and also provide a basis for career advancement in the area of interior works for the building industry.



Interior Design and Upholstery Technology Workshop



FACULTY OF APPLIED SCIENCES



Prof. Alice Mensah (PhD)
Dean, Faculty of Applied Sciences

FACULTY OF APPLIED SCIENCES

Description of the Faculty of Applied Sciences

The Faculty of Applied Sciences is one of the faculties in ATU set to train Scientists in the fields of computing, laboratory technology, mathematics and statistics with hands-on practice cut out for the industry and as well facilitate the developmental agenda in the related to applied science and technology.

Composition of Faculty of Applied Sciences

Accra Technical University Faculty of Built Environment is currently made up of four (4) departments, namely: Applied Mathematics and Statistics, Computer Science, Medical Laboratory Technology and Science Laboratory Technology. These four (4) departments are currently running Higher National Diploma (HND) and Bachelor Technology (BTech) programmes with various options.

Faculty Philosophy

To create world-class graduates well rounded and equipped with the requisite technical skills, as well as critical thinking, and problem-solving skills needed to work as a competent applied scientist with the professional acumen and dexterity to function in industry, consultancy, and as magnates.

Faculty Vision

To become the preferred Faculty for Applied Sciences, Research, Education and Technology transfer in Ghana.

Faculty Mission

To create a conducive environment for applied science research and competency-based training with high impact on industry.

Faculty Core values

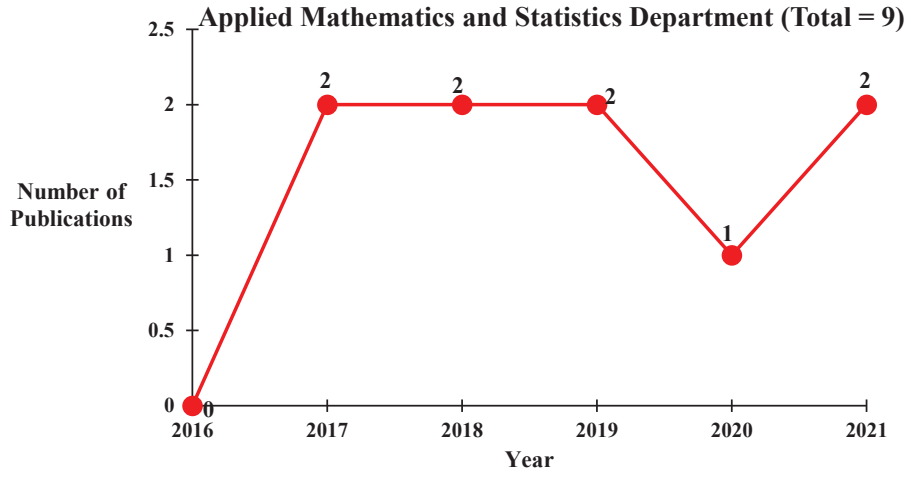
- Professionalism
- Integrity
- Novelty
- Service
- Excellence
- Teamwork

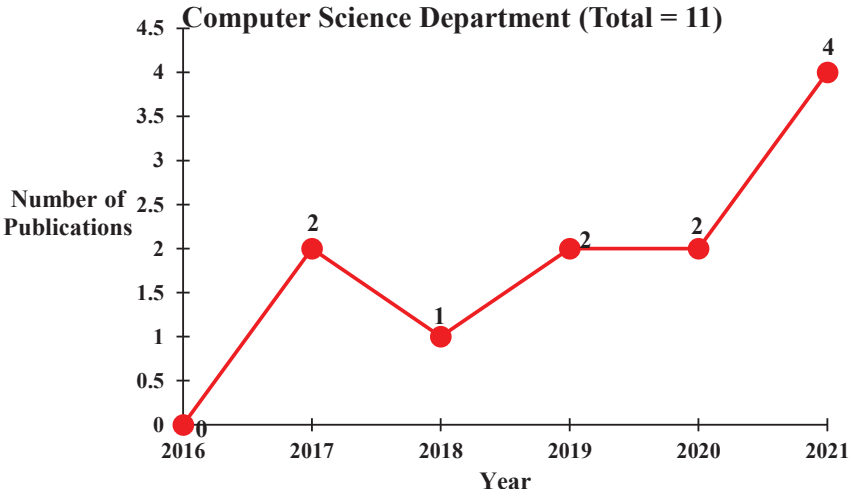
FACULTY OF APPLIED SCIENCES

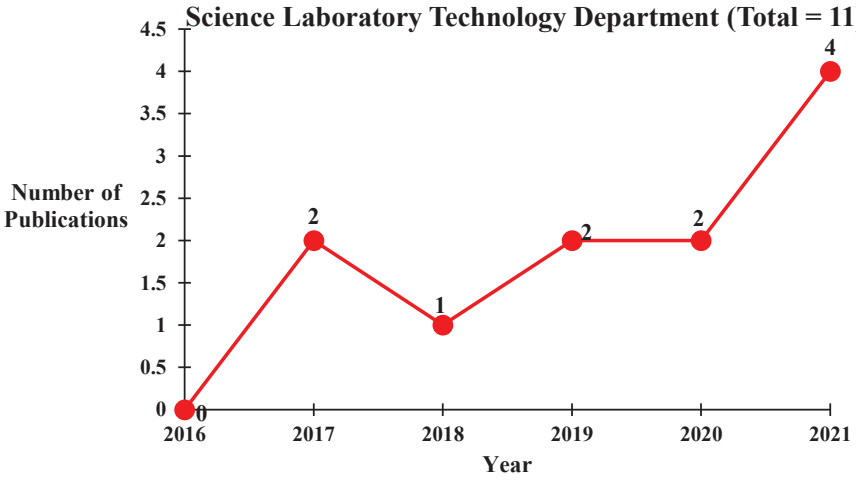
RESEARCH OUTPUTS: PUBLICATIONS (2016-2021)

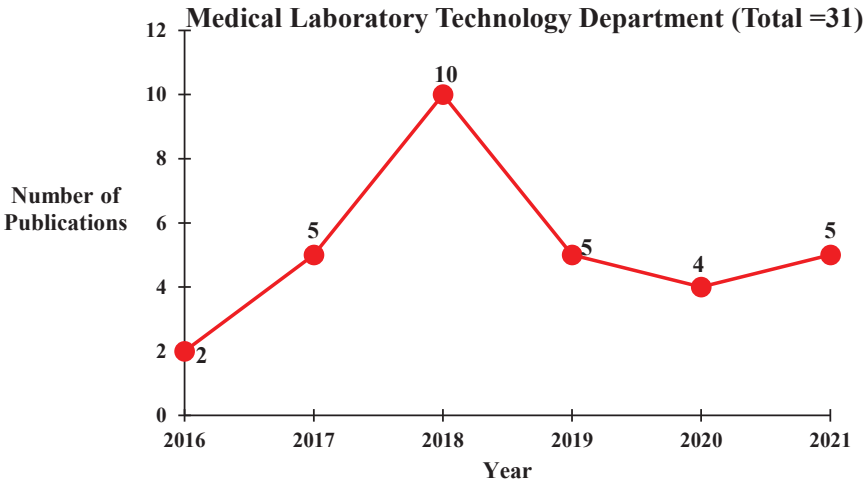
For the past six (6) years, research publication activities in the Faculty of Applied Sciences in ATU has been highly commendable. Statistics below show that some high impact publications are available in all Departments in the Faculty. Further statistics can be verified from Appendix A.

Research Output (Publication) Trends in High Impact Journals and Journals Indexed by Web of Science and Scopus




Computer Science Department (Total = 11)
Number of Publications
Year
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
2016
2017
2018
2019
2020
2021
0
2
1
2
2
4


Science Laboratory Technology Department (Total = 11)
Number of Publications
Year
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
2016
2017
2018
2019
2020
2021
0
2
1
2
2
4


Medical Laboratory Technology Department (Total =31)
Number of Publications
Year
12
10
8
6
4
2
0
2016
2017
2018
2019
2020
2021
2
5
10
5
4
5

FACULTY OF APPLIED SCIENCES - RESEARCH AND TEACHING LABORATORIES

Department of Science Laboratory Technology

In the age of Technological advancement in Medicine and Medical Science, the search for new ways of resolving complex ailments remains unabated. The Science Laboratory Technology Department provides the foundation of course sequence from Chemistry to Biology. Our instructional teaching and application to real-world situations set us apart from the rest.

Our well-resourced laboratories are designed to allow students conduct analysis on samples and other medical tests in a practical atmosphere. With the vision of becoming a leading centre of excellence in the West African Sub-Region for the training of Science Laboratory, Technologists and Technicians for various sectors of industry, the department is producing skilled graduates suited to work in the domestic economy and abroad with high standards. The department offers programmes at Certificate, Higher National Diploma and Degree levels in Science Laboratory Technology.

Department of Medical Laboratory Technology

The Department of Medical Laboratory Technology under the Faculty of Applied Sciences of Accra Technical University runs a 4-year Bachelor of Technology Medical Laboratory Science Programme. The BTech Medical Laboratory Science programme provides an opportunity to qualified graduates of Senior High Schools and Technical Schools who want to pursue a Bachelor of Technology in Medical Laboratory Science. More so, the programme offers an opportunity to graduates working in the medical laboratories with HND Science Laboratory Technology, Diploma/ HND Medical Laboratory Science and a degree in life science disciplines to obtain a professional license after completion of the BTech Medical Laboratory Science programme. Graduates of BTech Medical Laboratory Science will have the opportunity to work as licensed professionals in public and private hospitals and health facilities in the districts and regions across the country. They will also be equipped to operate clinical laboratories as entrepreneurs and business owners.

The continuous expansion of healthcare facilities in Ghana at both regional and districts levels and the relevance of evidence-based quality healthcare have led to the increased demand for professional medical laboratory services in the health service delivery system in Ghana. With the rapid advancements of technology in the field of clinical diagnostics, the need has arisen to train students to meet current demands and challenges. The Medical Laboratory Science Programme is a relevant innovation which seeks to produce professional medical laboratory scientists who offer quality assured services in clinical laboratory diagnostics, public health systems and medical research institutions in Ghana and beyond in a safe environment. The research and teaching laboratories of the Medical Laboratory Technology Department are the same facilities shared with the Laboratory Science Technology Department.



Biochemistry Lab I

Department of Computer Science

Building capacity in computer algorithm through research and training, shaping academic discussions in computer literacy with knowledge in the growth and utilization of modern technology and equipment for complex computing is the focus of the Computer Science Department. The department through their programmes (HND Computer Science, BTech Computer Science – To Up, and BTech Cyber Security) is poised to deliver competency-based training to ease the setting up of computer system software for individuals and corporate entities for the progression and application of modern computing technology in the world of works.

It is the plan of the department to champion continuous efforts to run a broadly-based computing discipline networking in hardware, software development, computer programming, software engineering, software testing as well as installation, maintenance and repair of computer systems.

These areas provide our students with the technical skills required to solve emerging problems in industry as well as serving as the foundation for research and graduate studies. Upon completion of this programme, graduates are better equipped with high-quality real-world experience through applied tasks to prepare them with mid-level experience in the progression of computer technology in industry.



B-Tech Large Computer Laboratory (100-Seater Capacity)



Fashion Computer Laboratory (85-Seater Capacity



Electrical Computer Laboratory (80-Seater Capacity).

Department of Applied Mathematics and Statistics

The study of Mathematics and Statistics is one of the vital areas of study for mankind. Their application and overlapping likeness permeate a plethora of fields ranging from science, business, technology, meteorology, etc. Political governance and economic planning have relied greatly on these two to disciplines to drive economic policy and provide the basis for same. To this end, the Department of Mathematics and Statistics provides training in statistical theory, techniques and methods, and their application to the collection, collation, preparation, analysis, and dissemination of data leading to the award of HND and BTech certificates.

Under this programme, the acquisition of practical and problem-solving skills is an important component in the understanding of basic questions of data collection, analysis, interpretation, publication, and dissemination. Students who wish to apply for any of these programmes are assured to benefit immensely in their career development leading to a positive impact on the national development agenda.





FACULTY OF APPLIED ARTS



Dr. Vivian Biney-Aidoo
Dean, Faculty of Applied Arts

FACULTY OF APPLIED ARTS

Description of the Faculty of Applied Arts

The Faculty of Applied Arts is one of the faculties in ATU set to train Arts students in the fields of fashion design and textiles, hotel, catering, institutional management, liberal studies and communication technology with hands-on practice cut out for the industry and as well facilitate the developmental agenda in the related to applied arts and technology.

Composition of Faculty of Applied Arts

Accra Technical University Faculty of Applied Arts is currently made up of three (3) departments, namely: Fashion Design and Textiles, Hotel, Catering, and Institutional Management, as well as Liberal Studies and Communication Technology. These three (3) departments are currently running Higher National Diploma (HND) and Bachelor Technology (BTech) programmes with various options.

Faculty Philosophy

To create world-class graduates well rounded and equipped with the requisite technical skills, as well as critical thinking and problem-solving skills needed to work as a competent applied artist with the professional acumen and dexterity to function in industry, consultancy, and as magnates.

Faculty Vision

To become a centre of excellence for the delivery of practice-oriented Applied Arts programmes and services, through the attraction and development of quality staff and students.

Faculty Mission

To offer Competency-Based Training in Applied Arts and creative disciplines.

Faculty Core Values

Creativity, Competency and Excellence

Faculty Core Characteristics

Originality, Hands-on and Customer Care

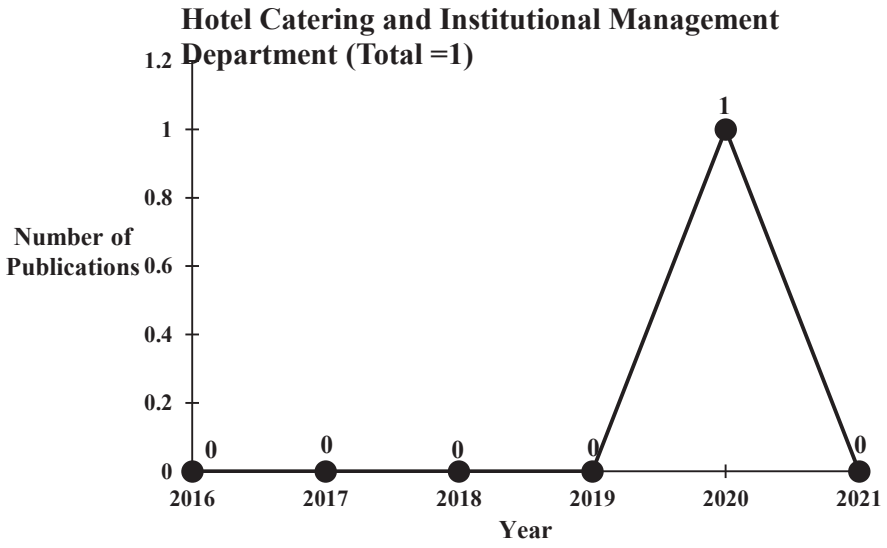
- High level of practical/hands on content in programmes offered.
- Strong industrial linkage through; a well-organized on-campus industrial setting for practical training; as well as a well-structured off campus students' industrial placement and experience.
- Increasing student numbers to provide a ready source of human capital for the running of production units to provide high-quality services.

FACULTY OF APPLIED ARTS

RESEARCH OUTPUTS: PUBLICATIONS (2016-2021)

For the past six (6) years, research publication activities in the Faculty of Applied Arts in ATU has been average. Statistics below show the trend of high impact publications in one Department in the Faculty. Further statistics can be verified from Appendix A

Research Output (Publication) Trends in High Impact Journals and Journals Indexed by Web of Science and Scopus



FACULTY OF APPLIED ARTS - RESEARCH AND TEACHING LABORATORIES

Department of Hotel Catering and Institutional Management (HCIM)

Hospitality and Tourism are two industries associated with travel planning, hotel management, events and entertainment. They remain vital to the growth of economies worldwide. Their proclivity to attract foreign investors is providing a golden venture for governments all over the world.

The Hotel, Catering and Institutional Management Department of Accra Technical University is fast becoming the spoke for contemporary advancements of teaching in the effective and efficient growth of the industry and other service-related fields.

The department over the years has endeavoured to provide a career-focused education which equips the learner with the competencies required for the world of work. This is demonstrated through our hands-on training and the zeal to provide academic excellence and also address industry needs and challenges.

With a 34-roomed hotel, Students' Demonstration Block (Lodge) with 30-seater restaurant and conference room, and a cafeteria, there is no limit for students to explore and hone their creative dexterity. The department has also built strong relationship with industry greats for students' training: JUST Food Company Ltd, Golden Tulip Hotel, Accra, Holiday Inn, Tulip Inn.

There are plans afoot by the department to collaborate with industry experts to introduce new market driving programmes to deepen research and encourage excellence among students to take up the enormous recompenses in the industry.

Department of Fashion Design and Textiles

Producing indigenous Ghanaian designs with international appeal is at the heart of the Fashion Design and Textile Department. Our focus is on leveraging the experiences and knowledge of renowned designers and the fabric industry in providing training in clothing and textile production; this sums up the department's zeal to be the epicentre of fashion design and textile production training in Ghana and West Africa.

Equipped with modern facilities, the department aspires to improve students' knowledge of garment production, textile designing and production, interior and exterior decoration. The HND Fashion Design and Textile and BTech Fashion Design and Textiles expose students to the contemporary craft in clothing and textile techniques with great emphasis on enhancing the quality and student excellence in the industry. The HND programme is for new designers and students looking to improve their portfolio, or professionals wanting to perfect their skillset as furniture designers, while the BTech Top-up provides auxiliary knowledge in the advance fields of Fashion Design and Textile Production.

Department of Liberal Studies and Communication Technology (LSCT)

The Department of Liberal Studies and Communication Technology (LSCT), formerly Language and Liberal Studies Department, is arguably one of the oldest departments in Accra Technical University. It is under the Faculty of Applied Arts. The department houses two major programmes in Public Relations with Digital Communication, Additionally, it is a servicing department and augments all other departments in the University in interdisciplinary courses such as Communication Skills, Business Communication, French, Research Methods, African Studies, Entrepreneurship, and Law.

While other departments provide students with specialized skills, the Department of Liberal Studies and Communication Technology, through its servicing courses, equip students with general skills in the ability to reason, speak, write, communicate, and make decisions independently and critically — transferrable skills for all careers and futures. The department is multidisciplinary and currently has sixteen (16) lecturers with diverse specialization.

In addition to the liberal courses being serviced from the department, the department has started running Diploma in Public Relations. It is a two-year programme certified by NABPTEX.



FACULTY OF BUSINESS



Dr. Shani Bashiru

Dean, Faculty of Business

FACULTY OF BUSINESS

Description of the Faculty of Business

The Faculty of Business is one of the faculties in ATU set to train Accounting, Marketing, Procurement and Public Administration students with hands-on practice cut out for the industry and as well facilitate the developmental agenda in the areas of social science and humanities.

Composition of Faculty of Business

Accra Technical University Faculty of Business is currently made up of two (4) departments, namely: Accounting and Finance, Marketing, Procurement and Supply Chain Management and Management and Public Administration. These four (4) departments are currently run Higher National Diploma (HND) and Bachelor Technology (BTech) programmes with various options.

Faculty Philosophy

To create world-class graduates well rounded and equipped with the requisite technical skills, as well as critical thinking, and problem-solving skills needed to work as a competent accountant, marketers, procurement specialists and public administrators with the professional acumen and dexterity to function in industry, consultancy, and as magnates.

Faculty Vision

To be a leading business school that provides practical business solutions to organizations locally and internationally.

Faculty Mission

We build the capacity of our graduates to be creative and equip them with technological and business acumen that makes them marketable and functional in the industry marketplace.

Faculty Core Characteristics

The core characteristics of the Faculty is to provide high career-oriented training programmes with emphasis on critical thinking and entrepreneurial skills to students to meet manpower needs of the business and humanities industry in Ghana.

Faculty Core Values

The achievement of our vision and mission is anchored on the following values (STARS):

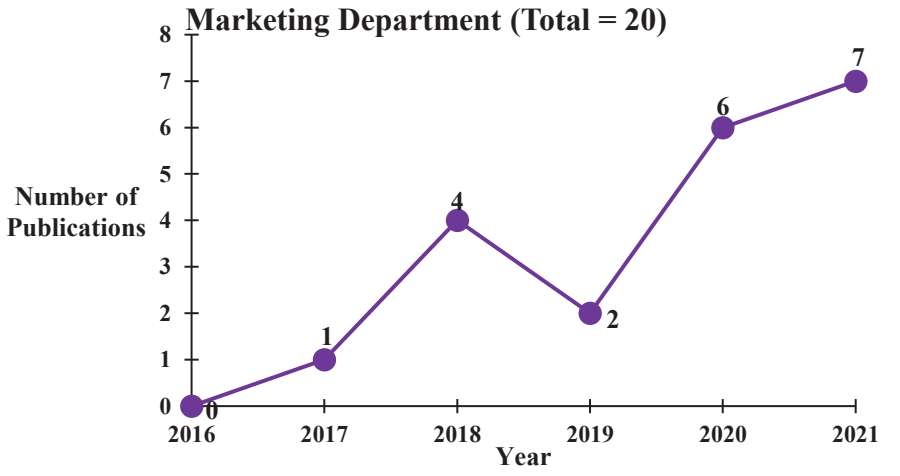
- S – Service orientation
- T – Teaching excellence
- A – Attention to detail
- R – Reliable business solutions
- S – Sublime research

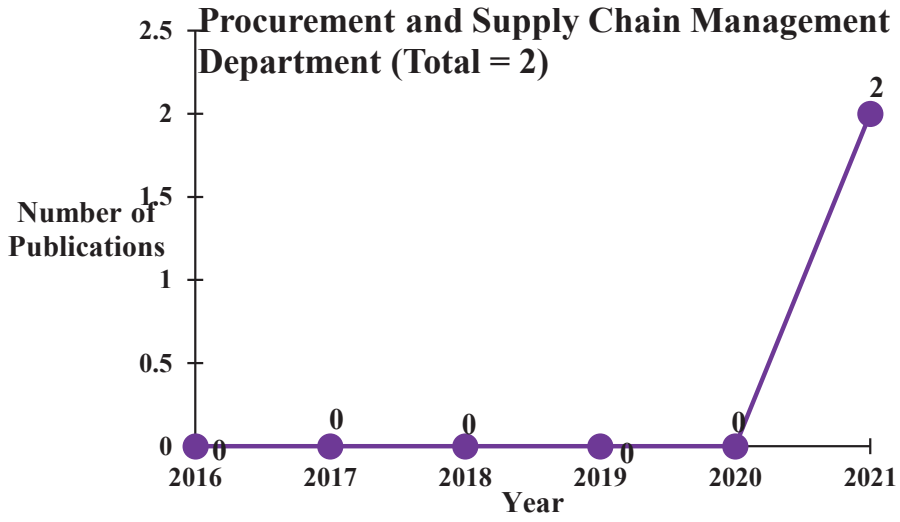
FACULTY OF BUSINESS

RESEARCH OUTPUTS: PUBLICATIONS (2016-2021)

For the past six (6) years, research publication activities in the Faculty of Business in ATU has been highly commendable in the Marketing Department. Statistics below show that some high impact publications are available two Departments in the Faculty. Further statistics can be verified from Appendix A.

Research Output (Publication) Trends in High Impact Journals and Journals Indexed by Web of Science and Scopus





Department of Marketing

The Marketing Department is home to a faculty with a wealth of experience and talents in a wide range of subjects in the business discipline. The Department is an inventive unit whose fulcrum continually revolves around the creation of outstanding marketing personnel who are well-equipped with the ability to serve modern industry; both manufacturing and service sectors.

In addition to topnotch tuition, our marketing course work prepares students to become effective professional leaders in their chosen fields after completion. The Department runs a Bachelor of Technology (BTech) programme in Marketing and Higher National Diploma (HND) programme in Marketing for both Morning and Evening Sessions.

Department of Accounting and Finance

The Accountancy and Finance Department exists to spearhead the competent development of career-focused graduates with the vision to transform the financial landscape of local businesses in all spheres of the Ghanaian economy. The department is motivated to blend out courses, workshops, and lectures that provide instructional finance planning and accounting methodologies to train professionals for demand-driven businesses that may require them.

Besides a solid foundation in Accounting, the programme affords graduates with robust and broad-based education with global exposures to thrive in careers in the discipline. The learning experiences of students is enhanced with internships, study groups and workshop/seminar activities. At the pinnacle of the developmental agenda of the department is to be proactive in providing solutions for challenging commerce transaction and champion research innovations in the accounting field.

Department of Management and Public Administration

The Department of Management and Public Administration trains students in the area of bilingual and general secretarial duties. The Department offers courses in Management Studies to prepare students as administrators in corporate, public, or non-governmental institutions. The department also runs Management and Administration of Public Systems; a discipline that involves the activity of executing policies, overseeing programme implementation through the combined application of policy and the management of modern systems. The Department is poised to distinguish itself as the best in secretarial training in the country.

Department of of Procurement and Supply Chain Management

Modern businesses and organizations competing in a global business environment require excellence in supply chain management. Increasing demand for personnel in this area has necessitated a holistic training and preparation of prospective candidates to be fit for future career opportunities The Procurement and Supply Chain Management department is mandated to train and equip students to build careers in the commerce of procurement and supply chain management using competency-based approach while providing a base for further academic and professional development in order to become self-employed or top-level and middle-level management professionals in industry.


ATU LIBRARY



Dr. Florence D. D. Plockey
University Librarian

ATU LIBRARY

Description of the Library

The Accra Technical University Library's primary objective is to provide up-to-date, relevant and cutting-edge information resources and services in the most appropriate formats to support the University's core mandate of teaching, learning, research and community services.

The University has three main Libraries, namely: the Applied Science and Engineering Library, the Business and Management Studies Library and the Hotel Catering and Institutional Management Library. The University Library provides the University community with a wide range of information services to facilitate teaching, learning and research for faculty, students and staff.

Composition of the Library

The University Library has three departments namely: Collection Development Department, Reader Services Department and Information Technology & Research Support Department.

Vision

Our vision is to develop a world-class Technical University Library that supports the information and research needs of the University.

Mission

The mission of Accra Technical University (ATU) Library is to provide up-to-date, relevant and quality information resources, services and facilities that support the university's mandate of teaching, learning, and research and community service.

Competitive Advantage of the ATU Library

1. The library has dynamic leadership that creates an enabling environment for research activities.
2. Strong online and social media presence that offers services and support for research within the university community and the general public.
3. Access to adequate databases (e-resources) and provision of research support for students and faculty in their project work and research activities respectively.
4. ATU Institutional Repository (ATUIR) for archiving, preserving and promotion of research outputs of the university.
5. Dedicated and diversely skilled staff that support faculty and student research.

Future Outlook

- The library Directorate has commenced activities to boost the research capacity of its staff. It targets to improve significantly the research outputs of the Directorate.
- It intends to heavily promote the ATUIR to give global visibility to the research output of the university.
- It hopes to strengthen information literacy training for final year B-Tech and HND students which was a huge success in 2022.
- The library will intensify information literacy training to build the capacity of faculty members in research.
- The library will enhance its editing and proof-reading services to faculty.
- The library will also increase its databases to cover subject areas not covered, as well as strengthen the resources in the other subject areas already covered. Additionally, the library will acquire physical information materials, including multimedia materials to support the faculties.
- The library intends to position itself strategically to access grants/funding opportunities to build its capacity, infrastructure and boost its presence globally.
- Work is currently ongoing to establish a Research Commons. It is expected to be completed by 2023.

Research Activities of the ATU Library

1. The library instituted a webinar series that touches on various topics in academia, mostly research inclined. Since its inception in 1st October, 2020, the following webinars have been organized:

- Academic Library Contributions to Teaching, Learning and Research in Tertiary Institutions.
- Trends in Academic Writing and publishing
- Trends in Academic Writing and Publishing in an ongoing pandemic.
- Education and MOOCs: Challenges and Way forward for Technical Universities
    - Teaching/Learning Engineering in COVID-19 Era: Lessons Learnt from ATU
- Effective Teaching, curriculum development and mentorship
    - Introductory STATA for data analysis

Overcoming top barriers to academic progress: Art of wasting away and Academic Witchcraft

- Academic Freedom vs Partisanship: The Art of making judgment
- The Use and Management of Information Systems in academic institutions for academic excellence.
- Navigating the publishing terrain


A T U LIBRARY
WEBINAR
SERIES
ACADEMIC LIBRARIES' CONTRIBUTION TO TEACHING,LEARNING AND RESEARCH IN TERTIARY INSTITUTIONS
ZOOM
ID: 922 0321 9259
1ST OCT, 2020
10:30AM


VIRTUAL TRAINING ON TRENDS IN
ACADEMIC
WRITING & PUBLISHING
ETHICAL USE OF INFORMATION
MANAGING YOUR RESEARCH PROJECT USING THE MENDELEY REFERENCE MANAGER: AN OVERVIEW
10:00AM
ZOOM
ID: 926 9470 9724

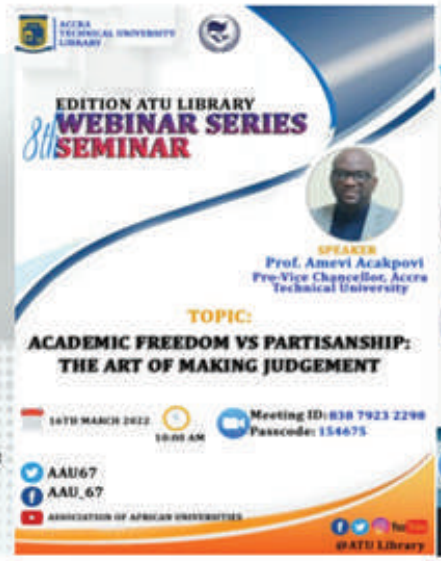

EDITION ATU LIBRARY
WEBINAR SERIES
TRENDS IN
ACADEMIC
WRITING & PUBLISHING IN AN ONGOING
PANDEMIC
Speakers
10:00AM TO
1:00PM GMT


EDITION ATU LIBRARY
4th WEBINAR SERIES
SEMINAR
Sub-theme
Speakers
Carnegie Grant
Moderator / Chairperson
27th May, 2021
10:00am
ATU LIBRARY and AAU


EDITION ATU LIBRARY
5th WEBINAR SERIES
SEMINAR
Speakers
Sub-theme
2:00 pm


LIBRARY DRIPTT AAU
6th EDITION ATU LIBRARY
WEBINAR SERIES SEMINAR
TRENDS IN ACADEMIC WRITINGS AND PUBLISHING IN AN ONGOING PANDEMIC
SUB THEME
"The art of Academic Report Writing for Non-Teaching Staff"
"The Mechanism of Writing Position Papers"
Wednesday, Oct., 6th, 2021
10:00am
THE PANELIST


EDITION ATU LIBRARY
7th WEBINAR SERIES
SEMINAR
Topic:
OVERCOMING TOP BARRIERS TO ACADEMIC PROGRESS: ART OF WASTING AWAY & ACADEMIC WITCHCRAFT
Speaker
Prof. Amevi Acakpovi
Pro-Vice Chancellor, Accra Technical University
Wednesday
17th November, 2021
10:00am
Meeting ID: 870 5928 3512
Passcode: 293548


EDITION ATU LIBRARY
8th WEBINAR SERIES
SEMINAR
SPEAKER
Prof. Amevi Acakpovi
Pro-Vice Chancellor, Accra Technical University
TOPIC:
ACADEMIC FREEDOM VS PARTISANSHIP: THE ART OF MAKING JUDGEMENT
16TH MARCH 2022
10:00 AM
Meeting ID: 838 7923 2298
Passcode: 154675
AAU67
AAU_67
@ATU Library


ACCRA TECHNICAL UNIVERSITY LIBRARY
ASSOCIATION
THE USE AND MANAGEMENT OF INFORMATION SYSTEMS IN ACADEMIC INSTITUTIONS FOR ACADEMIC EXCELLENCE
9th WEBINAR SERIES
SEMINAR
SPEAKERS
26TH MAY 2022
10:00 AM
PASSCODE:
AAU67
AAU_67
ASSOCIATION OF AFRICAN UNIVERSITIES
@ATU Library



2. The library in 2021 organized information literacy training for students on a need-based approach. Recognizing the challenges that came with project work of students following the introduction of new guidelines for students project work, the library instituted a research-oriented information literacy training for all final years on departmental basis in 2022. The training covered areas such as how to do literature searches and write literature reviews, how to use Mendeley Referencing tool for citation, understanding plagiarism and Turnitin® similarity report, and ATU project formatting guidelines.

3. The library organized chocolate day event in 2021 and 2022 to promote library products (new books, Library Management System and e-resources) and services to the user community to enhance research.





4. The library commenced a research seminar series aimed at developing the capacity of its staff to actively participate in the research activities of the university. Five in the series have been organized in 2022. Following this intervention, three (3) of the library staff prepared and presented papers at the 2nd Applied Research Conference of Technical Universities in Ghana.

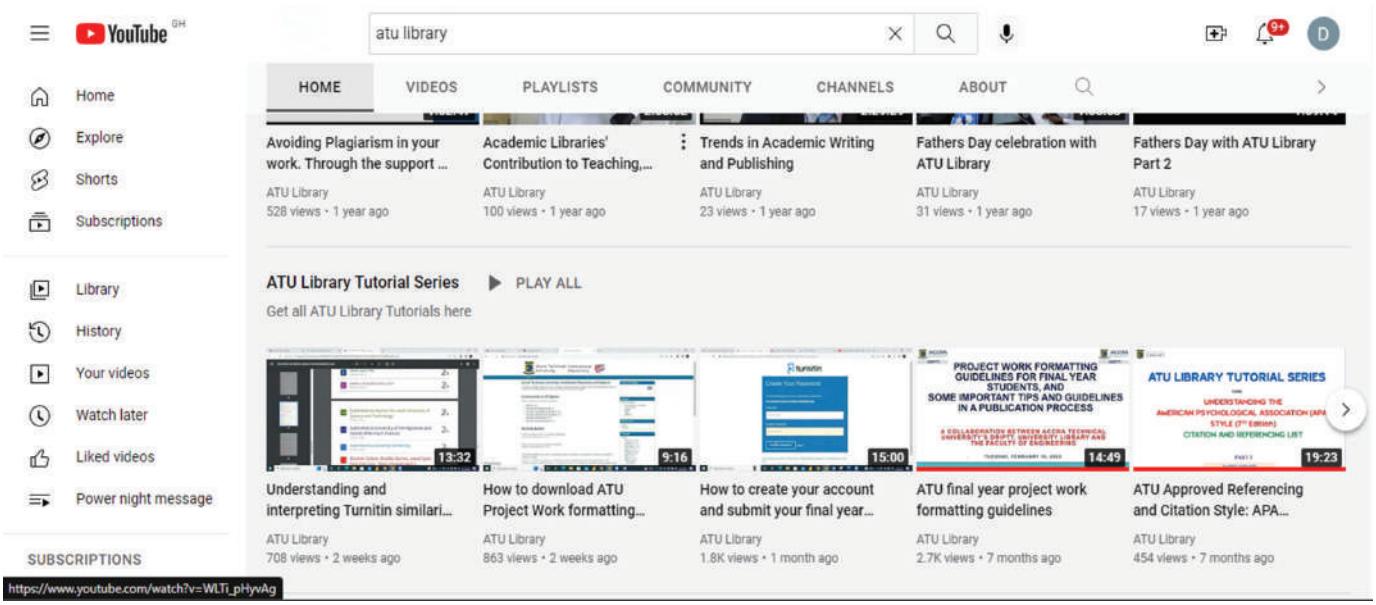






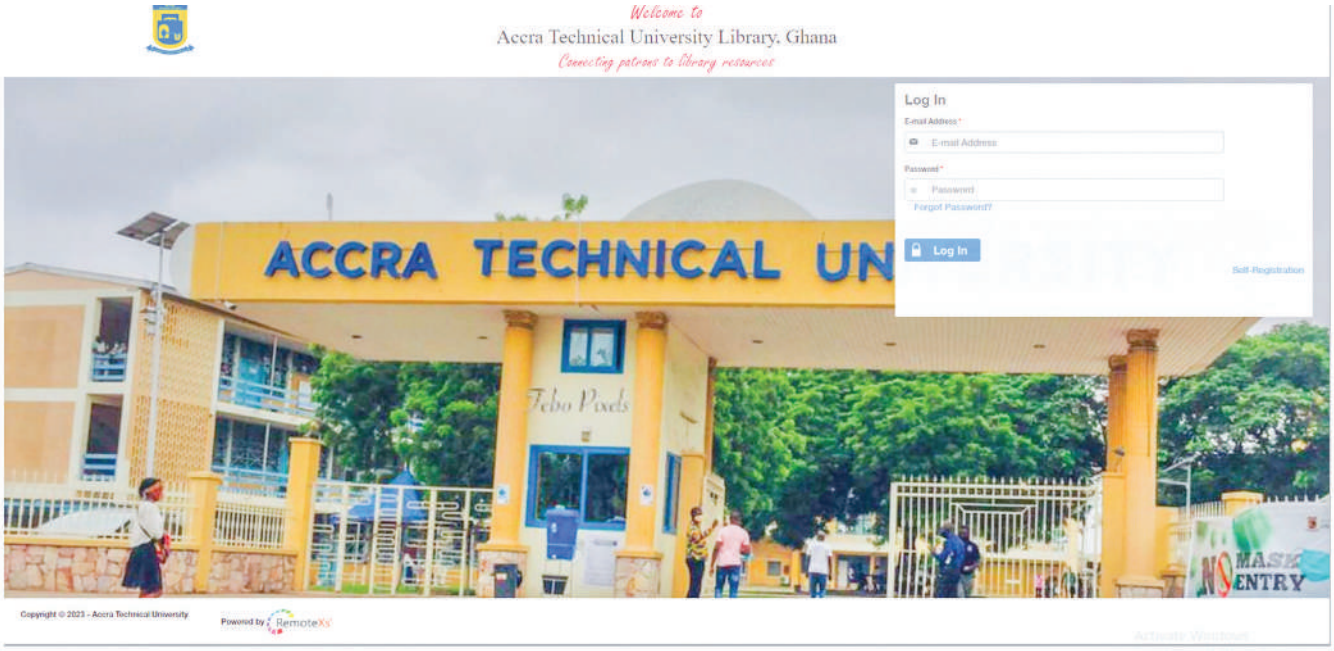
5. The Directorate of Research, Innovation, Publication and Technology Transfer, in collaboration with the library, organized Workshops for all academic faculties on research - Accessing ATU Library Electronic System.

6. The library used and continues to use its social media platforms to develop content for the university community, especially on how to use a number of research tools. Currently, the ATU Library YouTube channel has over 12 contents in its tutorial series section of the page.

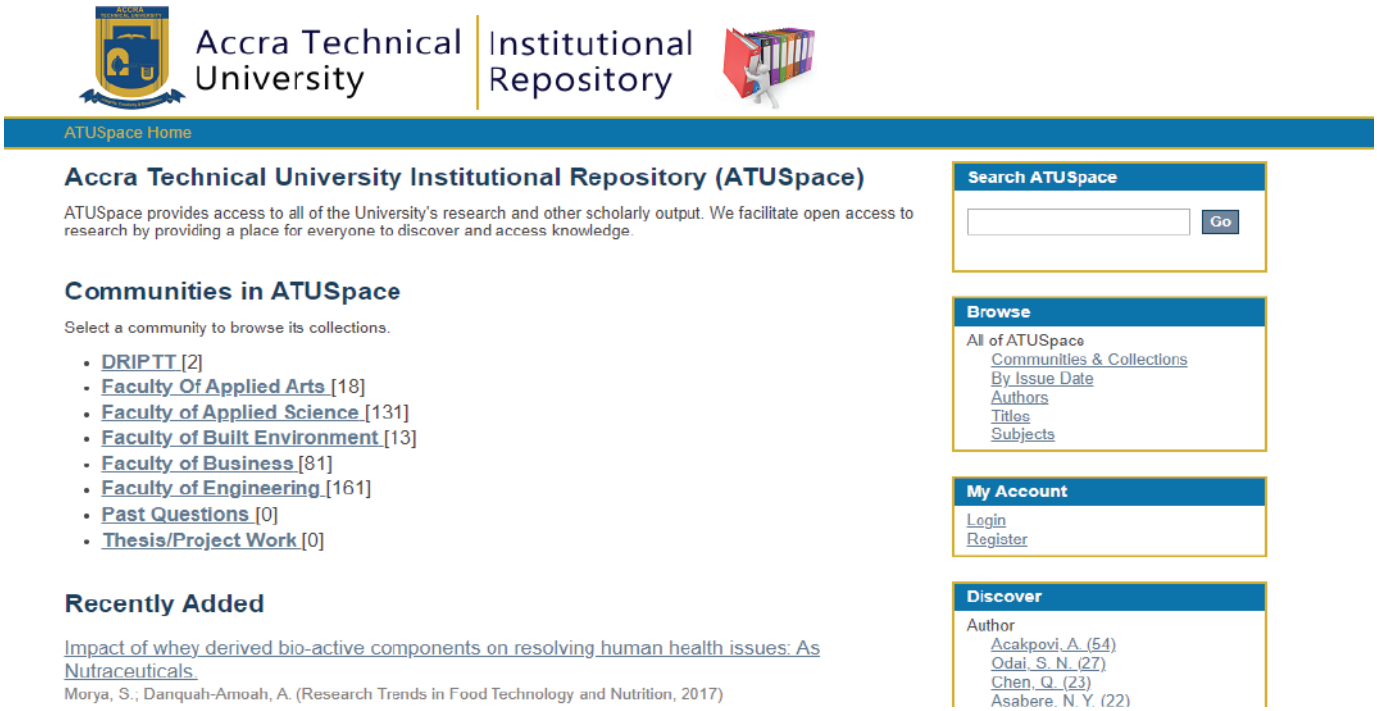


7. The library subscribed to two major Electronic resource platforms that enabled access to a wide range of databases to support the teaching, learning and research activities of the university. They are IGI Global and Research 4 Life.

8. The library migrated its off-campus access platform from EZYProxy to RemoteX. Following this, the library registered faculty members on the platform to allow them access the library resources remotely.



9. The library liaised with DRIPTT to collect information on faculty publications and subsequently have populated the ATUIR (ATUSpace), with data on same. Currently, over 200 research publications have been uploaded. This will help archive, preserve and make visible the research output of the university.



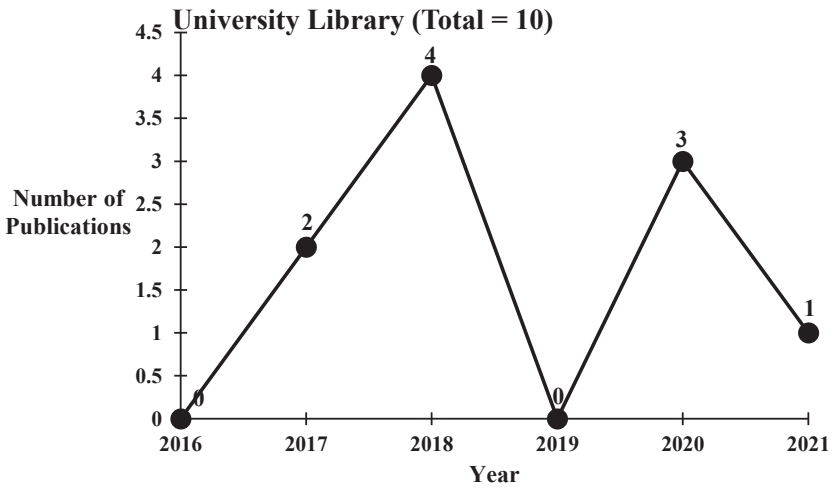
10. The library has created a community on the ATUIR for submission of student project work to archive, preserve and safeguard the academic integrity of students' research.

11. The library played a major role in the organization of the 2nd Applied Research Conference for Technical Universities in Ghana (ARCTU-G). The University Librarian was the Co-Chairperson of the Local Organising Committee (LOC) for the conference.

ATU LIBRARY

RESEARCH OUTPUTS: PUBLICATIONS (2016-2021)

For the past six (6) years, research publication activities in the University Library in ATU has been commendable. Statistics below show the trend of high impact publications in the University Library. Further statistics can be verified from Appendix A.



RESEARCH WORKSHOPS/SEMINARS

Publish or Perish: Vice-Chancellor of ATU Admonishes Teaching Staff



The Vice-Chancellor of Accra Technical University, Professor Samuel Nii Odai has admonished the University's Teaching Staff to keenly engage in active research and publish same in reputable journals to boost their ratings and that of the University. Professor Odai made this known in his opening address and presentation at a 3-day research seminar dubbed "ATU Research Growth and Expansion Seminar" under the auspices of the Directorate of Research, Innovation, Publication and Technology Transfer (DRIPTT) in collaboration with the five faculties of the University. The Vice-Chancellor added that it was erroneous for lecturers to assume that their main and only objective is to teach. "As a lecturer, your core mandate is not just teaching. You're to conduct impactful research. That is how you become relevant," he stressed.

He tasked the various Deans and Heads of Departments as well as all present to set up research teams to conduct researches that have the propensity to impact society.

Making ATU Visible to the World

The Director of DRIPTT, Prof. Nana Yaw Asabere, delivered on one of the main topics of the seminar, "Research Impact and Visibility in ATU" to keep the participants abreast with current trends and tools available in conducting and publishing research works. He encouraged the participants not to shelve their research works and practically demonstrated step-by-step how publishing one's research work inured to the benefit of the researcher and the University in the form of visibility and rankings. "We have a lot of research platforms where you can publish your works such as Google Scholar, Researchgate, Scopus, and Web of Science etc." He revealed while providing statistics on the number of lecturers so far on these platforms and the commensurate visibility percentage. He motivated unregistered participants to do so as soon as possible.



Research, Grant Writing and ARIF



The Pro-Vice-Chancellor, Professor Amevi Acakpovi, who is adept at research and grant writing took the participants through the rudiments of winning grants to fund one's research or project in an insightful PowerPoint presentation. He further showed the various avenues where participants could seek funding for their projects and research works, beginning with the ATU Research Fund (ARIF). He charged the participants to come together in groups and apply.

Panel Discussions

Each faculty Dean had the opportunity to update their faculty members and participants there gathered on their various plans to make research the staple activity in their respective faculties in a panel discussion facilitated by Prof. Asabere. The Vice-Chancellor was also on the panel to answer some questions. The 3-day seminar took place at the University Main Auditorium on Tuesday, Thursday and Friday, February 23rd, 25th and 26th respectively.







Day Two - Members of the Faculty of Applied Science and Applied Arts in group photograph with the VC, Pro VC and Director of DRIPTT (m).



PICTURE GALLERY









Day Three- Members of the Faculty of Business a in group photograph after the first session of the seminar



Phase 1: 3-Day ATU Research Growth and Expansion Seminars

The Directorate of Research, Innovation, Publication and Technology Transfer in collaboration with the various faculties has commenced a 3-day research seminar to equip academic staff with the trends in research and grant funding.

The seminar which opened on Tuesday, February 23, 2021, at the University Main Auditorium saw faculty members from the Faculties of Engineering and Built Environment in attendance.

In his welcome address, the Vice-Chancellor of the University, Professor Samuel Nii Odai underscored the essence of research in a tertiary institution such as Accra Technical University. He took the participant through a practical presentation on the foundations of research. He intimated that ''in the university environment and as a lecturer, you either publish or perish'' to reiterate the core mandate of lecturers.

The Director of Research, Innovation, Publication and Technology Transfer, Dr. Nana Yaw Aabere delivered a presentation titled ''Research Impact and Visibility in ATU'' to keep the participants abreast with current trends and tools available in conducting and publishing research works. This was followed by another insightful presentation by the Pro-Vice-Chancellor, Professor Amevi Acakpovi, who took the participants through a presentation on grant and research funding. He further showed the various avenues where participants could seek funding for their projects and research works.

To update faculty members on the plans their respective Deans have for them in respect of research, Prof. Asabere facilitated a panel discussion involving the Vice-Chancellor and the Deans of the Faculties of Engineering, and Built Environment, Professor Felix Kutsanedzie and Mr. Seth Allotey, respectively. At the end of the discussion, Prof. Asabere and Prof. Odai encouraged the participants to actively access the dedicated fund for research – the ATU Research Fund (ARIF).

Participants had the opportunity to ask questions and make contributions.

The seminar continues on the 25th and ends on the 26th of February.

Phase 2 - ATU Research Growth and Expansion Seminar: Faculty Of Business

The Directorate of Research, Innovation, Publication and Technology Transfer (DRIPTT) in collaboration with the Faculty of Business organized a two-day research seminar to equip academic staff in publishing academic papers and research collaboration.

The seminar which started on Thursday, March 11, 2021, at the University Auditorium saw Deans, Head of Departments (HODs) and lecturers in attendance.

The Vice-Chancellor, Professor Samuel Nii Odai, opening the seminar on the first day thanked the research department for organizing this event again. He admonished the lecturers to take research work keenly as this is one of the few sure ways for promotion and graduation from a lecturer to even professorial roles. He also added that while impactful research works bring personal fulfilment along with handsome remuneration, they also put the university on a higher pedestal.

The Director of Research, Innovation, Publication and Technology Transfer (DRIPTT), Prof. Nana Yaw Asabere in his remarks stated the workshop is a continuation of the last workshop which was organized two weeks ago. He entreated participants to give the seminar a great deal of attention.

Research Collaboration: Wisdom vs Folly



Speaking on the second day of the seminar, Prof. George Amoako, Senior Lecturer from the Department of Marketing at the University of Professional Studies in his presentation took the participants through the fundamentals in research and publication.

Prof. Amoako spoke on the publish or perish culture. He encouraged the participants to publish at least two times a year for starters and build upon the number in subsequent years. He further encouraged them to consider rejections from journals they wish to publish in as part of the learning process.

Prof. Amoako concluded his presentation by taking the participants through the roles and responsibilities in publishing academic papers and research collaboration.

Publishing Academic Papers: Thrills and Spills

Professor Kwasi Dartey-Baah, associate professor at the Department of Organisation and Human Resource Management (OHRM) at the University of Ghana Business School, one of two resource persons, in his presentation entreated the participants to identify their areas of expertise. He stated that this will aid them to ascertain their strengths and weakness in approaching topics for research. He also encouraged the participants to target credible journals to publish in and know their preferences.

Professor Dartey-Baah also entreated the participants to work in teams since he believes will make the publication cover a wider scope of knowledge. He continued that participants must be creative and learn from their works. He stated participants take advantage of brief and reflective moments and learn to write clearly.

RESEARCH VISIBILTY, AWARDS AND ACHIEVEMENTS

Accra Technical University Rankings - AD Scientific Index 2022

UNIVERSITY DETAILS

Other Names
Accra Technical University

Region
Africa

Country
Ghana

City
Accra

City Population
-

Founded
1949

Sources of Funding
Public

Motto
Truth Excellence Service

Web Site
atu.edu.gh

Ranking According to	# in 16989 universities in World	# in 1189 universities in Africa	# in 70 universities in Ghana
Total H index	7564	343	13
Last 5 years H index	7646	379	18
Total i10 index	7833	356	14
Last 5 years i10 index	7800	389	17
Citiations	9881	529	25
Last 5 years Citiations	8466	448	21

Number of scientists in Accra Technical University	Total number of scientists	Agriculture & Forestry	Arts, Design and Architecture	Business & Management	Economics & Econometrics	Education	Engineering & Technology	History, Philosophy, Theology	Law / Law and Legal Studies	Medical and Health Sciences	Natural Sciences	Social Sciences	Others
In World's Top 2% Scientists	0	0	0	0	0	0	0	0	0	0	0	0	0
In World's Top 10% Scientists	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Scientists in Index	25	1	0	7	1	0	5	0	0	1	0	1	9

First 10 Best Scientists in Accra Technical University

World Rank

1

Felix YH Kutsanedzie — #314409

Agriculture & Forestry / Agricultural and Biosystems Engineering



33 Publications - 1298 Citations

Most Popular Article : Near infrared system coupled chemometric algorithms for enumeration of total fungi count in cocoa...

2

Nana Yaw Asabere — #416959

Engineering & Technology / Computer Science



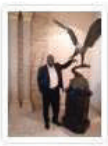
28 Publications - 1010 Citations

Most Popular Article : Benefits and challenges of mobile learning implementation: Story of developing nationsNY Asaberel...

3

Amevi Acakpovi — #622113

Engineering & Technology / Electrical & Electrical Engineering



21 Publications - 518 Citations

Most Popular Article : Analytical method of sizing photovoltaic water pumping systemA Acakpovi, FF Xavier, R Awuah-Baffo...

4

Isaac Asempah — #762094

Engineering & Technology / Mechanical Engineering

10 Publications - 444 Citations

Most Popular Article : Injectable superparamagnetic ferrogels for controlled release of hydrophobic drugsJ Qin, I Asempa...

5

Phyllis Naa Yarley Otu — #862943

Accra Technical University



6 Publications - 282 Citations

Most Popular Article : Extraction and characterization of chicken feet soluble collagenC Zhou, Y Li, X Yu, H Yang, H Ma,...

Ernest Christian Winful #916694

Accra Technical University



3 Publications - 152 Citations

Most Popular Article : Enhancing teachers' performance through training and development in Ghana education service (a ca...

Elikem Chosniel Ocloo #934839

Business & Management / Marketing



6 Publications - 309 Citations

Most Popular Article : Globalization and competitiveness: Challenges of small and medium enterprises (SMEs) in Accra, Gh...

Alice Constance Mensah #940467

Accra Technical University

3 Publications - 207 Citations

Most Popular Article : Characteristics of users and implications for the use of complementary and alternative medicine i...

Frank Frimpong Opuni #954682

Business & Management / Marketing



5 Publications - 118 Citations

Most Popular Article : Short-Term Changes in Behaviors Resulting from COVID-19-Related Social Isolation and Their Influe...

Glenn Kwabena Gyimah #954910

Engineering & Technology / Mechanical Engineering

5 Publications - 117 Citations

Most Popular Article : Dry sliding wear studies of copper-based powder metallurgy brake materialsG Kwabena Gyimah, P Hua...

Total Citiations

1. 
Felix YH Kutsanedzie
#442538
Agriculture & Forestry / Agricultural and Biosystems Engineering

2. 
Nana Yaw Asabere
#518384
Engineering & Technology / Computer Science

3. 
Amevi Acakpovi
#742582
Engineering & Technology / Electrical & Electronic Engineering

4. 
Isaac Asempah
#791217
Engineering & Technology / Mechanical Engineering

5. 
Elikem Chosniel Ocloo
#878437
Business & Management / Marketing

Last 5 Years Citiations

1. 
Felix YH Kutsanedzie
#296882
Agriculture & Forestry / Agricultural and Biosystems Engineering

2. 
Nana Yaw Asabere
#446909
Engineering & Technology / Computer Science

3. 
Amevi Acakpovi
#641024
Engineering & Technology / Electrical & Electronic Engineering

4. 
Isaac Asempah
#703175
Engineering & Technology / Mechanical Engineering

5. 
Phyllis Naa Yarley Otu
#778684
Accra Technical University

Total H Index

1. 
Felix YH Kutsanedzie
#314409
Agriculture & Forestry / Agricultural and Biosystems Engineering

2. 
Nana Yaw Asabere
#416959
Engineering & Technology / Computer Science

3. 
Amevi Acakpovi
#622113
Engineering & Technology / Electrical & Electronic Engineering

4. 
Isaac Asempah
#762094
Engineering & Technology / Mechanical Engineering

5. 
Phyllis Naa Yarley Otu
#862943
Accra Technical University

Last 5 years H Index

1. 
Felix YH Kutsanedzie
#211174
Agriculture & Forestry / Agricultural and Biosystems Engineering

2. 
Nana Yaw Asabere
#353135
Engineering & Technology / Computer Science

3. 
Amevi Acakpovi
#541508
Engineering & Technology / Electrical & Electronic Engineering

4. 
Isaac Asempah
#650569
Engineering & Technology / Mechanical Engineering

5. 
Phyllis Naa Yarley Otu
#769540
Accra Technical University

Total i10 Index

1. 
Felix YH Kutsanedzie
#326119
Agriculture & Forestry / Agricultural and Biosystems Engineering

2. 
Nana Yaw Asabere
#383206
Engineering & Technology / Computer Science

3. 
Amevi Acakpovi
#495801
Engineering & Technology / Electrical & Electronic Engineering

4. 
Isaac Asempah
#771895
Engineering & Technology / Mechanical Engineering

5. 
Phyllis Naa Yarley Otu
#885970
Accra Technical University

Last 5 Years i10 Index

1. 
Felix YH Kutsanedzie
#245262
Agriculture & Forestry / Agricultural and Biosystems Engineering

2. 
Nana Yaw Asabere
#341863
Engineering & Technology / Computer Science

3. 
Amevi Acakpovi
#484638
Engineering & Technology / Electrical & Electronic Engineering

4. 
Isaac Asempah
#660549
Engineering & Technology / Mechanical Engineering

5. 
Phyllis Naa Yarley Otu
#802589
Accra Technical University

ACADEMIC STAFF ON SCOPUS (Number of Documents and h-Index Performance)

	Author	Documents	h-index	Affiliation	City	Country/Territory
1	Kutsanedzie, Felix Y.H.	33	20	Accra Technical University	Accra	Ghana

	Author	Documents	h-index	Affiliation	City	Country/Territory
1	Asabere, Nana Yaw	35	11	Accra Technical University	Accra	Ghana

	Author	Documents	h-index	Affiliation	City	Country/Territory
1	Asempah, Isaac	18	11	Accra Technical University	Accra	Ghana

	Author	Documents	h-index	Affiliation	City	Country/Territory
1	Acakpovi, Amevi	64	9	Accra Technical University	Accra	Ghana

	Author	Documents	h-index	Affiliation	City	Country/Territory
1	Osei-Adjei, George	17	9	Accra Technical University	Accra	Ghana

	Author	Documents	h-index	Affiliation	City	Country/Territory
1	Moro, Adams	10	6	Accra Technical University	Accra	Ghana

	Author	Documents	h-index	Affiliation	City	Country/Territory
1	Gyimah, Glenn Kwabena	11	3	Accra Technical University	Accra	Ghana

	Author	Documents	h-index	Affiliation	City	Country/Territory
1	Opuni, Frank Frimpong	10	3	Accra Technical University	Accra	Ghana

STAIR AWARDS Trustworthy International Recognition	Engr. Professor Amevi Acakpovi (PhD), Snr. MIEEE, FIET
	Accra Technical University, Accra, Ghana
Gold Medal, 2021	Distinguished Professor in Electrical Engineering

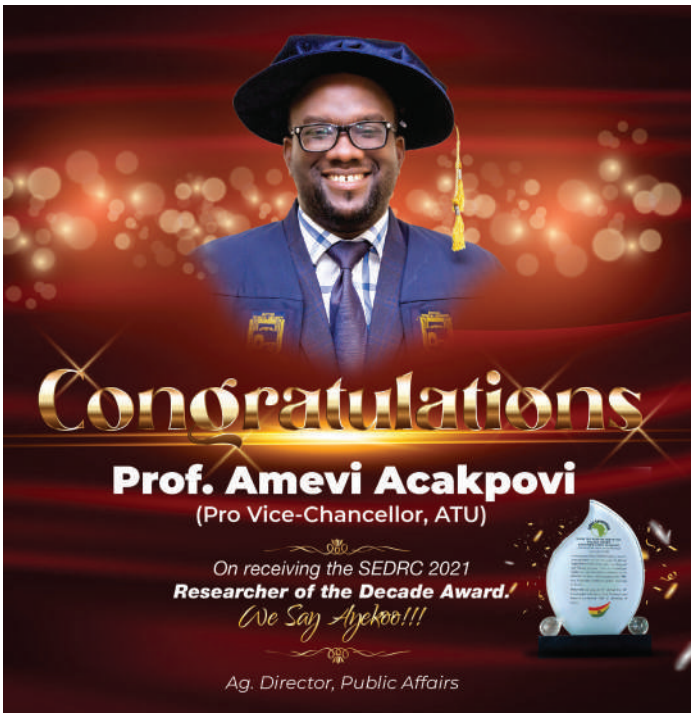
STAIR award is globally recognized as Science, Technology, Academia, Innovation and Research Awards (STAIR Awards) 2021 based in India. The first edition of STAIR award took place in Pune, India on the 28th December, 2021. There were 137 nominees from 106 universities and 26 countries globally. Only 37 people won the award in various categories of Gold, Silver and Bronze from 18 countries globally.



Prof. Amevi Acakpovi, representing Accra Technical University as a university and Ghana as country of origin won the gold medal in the category of Distinguished Professor in Electrical Engineering. The objective of STAIR Awards is to recognize the outstanding academic heroes who are continuously engaged to build the future of the sustainable world through imparting knowledge and excellence to the future generations.

Prof Amevi Acakpovi was the recipient of the Decade Researcher Award, awarded at the Applied Research Conference in Africa (ARCA) 2021 on the 25th August, 2021. ARCA is an annual international conference based in Ghana that promotes science, technology and innovation. ARCA publishes proceeding in Springer.

The Decade Researcher award, awarded to Prof Amevi Acakpovi was a unique and special award to recognize his ten years of stewardship and academic excellence with ARCA through active publication of engineering, technology and innovation based papers in internationally reputed journals.





Best Paper Award

This is awarded to the paper titled

Efficient Modelling of a PCB Transmission Line for High Speed Digital Systems

authored by

Amevi Acakpovi, Nana Yaw Asabere, Robert Sowah, Ruhiya Abubakar and Samuel Blay Amo

Presented at the 7th IEEE International Conference on Adaptive Science and Technology held on the 22nd to 24th of August 2018 at the University of Ghana

IEEE ICAST Chair

IEEE

IEEE Ghana Section Chair

ACKNOWLEDGEMENTS

Research, Innovation, and Publications Committee of Academic Board

1.	Prof. Amevi Acakpovi	Pro Vice-Chancellor	Chairman
2.	Mrs. Sylvia Beatrice Oppong-Mensah	Registrar	Member
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9.	Mr. Isaac Aidoo	Rep. Faculty of Built Environment	Member
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11.	Mr. Frank Frimpong Opuni	Rep. Academic Board	Member
12.	Ms. Ida Aba Blankson	Senior Assistant Registrar	Secretary
13.	Prof. Nana Yaw Asabere	Director, DRIPTT	Co-opted Member

DRIPTT Board Members

1.	Prof. Nana Yaw Asabere	Director, DRIPTT	Chairman
2.	Dr. Osei Antwi	Rep. Faculty of Applied Sciences	Member
3.	Dr. Prodeo Yao Agbotui	Rep. Faculty of Engineering	Member
4.	Dr. William Kwesi Senayah	Rep. Faculty of Applied Arts	Member
5.	Dr. Michael Addai	Rep. Faculty of Business	Member
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8.	Dr. Florence Plockey	University Librarian	Co-opted Member
9.	Dr. Glenn Kwabena Gyimah	Ag. HOD – Research, Innovation and Grant	Co-opted Member

INTRODUCTION AND BRIEF BACKGROUND OF DRIPTT

About Us

The Directorate of Research, Innovation, Publication, and Technology Transfer (DRIPTT) was established in Accra Polytechnic (now Accra Technical University) in the year 2010 initially as the Research and Innovation Centre headed by a Director. Other staff members of the Research and Innovation Centre included the Head of Research Department and Research Assistants.

Over the years, DRIPTT has aided ATU staff to engage in cutting-edge applied research in the fields of engineering, applied sciences, applied arts business, and technology to tackle environmental and other socio-economic challenges in the country. Academic Staff members in ATU have conducted innovative research and published their findings in high-impact journals. Additionally, some ATU academic staff are also cited in Google Scholar, and highly reputable research visibility databases/networks such as Web of Science and Scopus. It is the current mandate of DRIPTT to put in measures that will improve the research visibility, research impact, and national and international university rankings of ATU. DRIPTT comprises of the following departments:

- **Research Innovation and Grants (RIG) Department:** This Department is responsible for all research and innovation-related issues such as grants, proposals, and research result dissemination in terms of publications.
- **Commercialization and Technology Transfer (CATT) Department:** This Department is responsible for commercializing products, and innovations through exhibitions, conferences, patenting, etc.

Staffing

Current staffing in DRIPTT is as follows:

PERMANENT STAFF

S/N	NAME	RANK/DESIGNATION	QUALIFICATION
1.	Prof. Nana Yaw Asabere	• Associate Professor, Computer Science Department • Director - DRIPTT	Ph.D. Computer Science M.Sc. ICT, B.Sc. Computer Science
2.	Dr. Glenn Kwabena Gyimah	• Lecturer, Mechanical Engineering Department • Ag. HOD – Research Innovation and Grants	Ph.D. Mechanical Engineering M.Eng. Mechanical Engineering and Theory, HND Mechanical Engineering
3.	Edith Mensah	Assistant Research Fellow	HND Statistics BSc Statistics MSc Applied Statistics
4.	Paul Goddey	Senior Research Assistant	HND SLT BTECH SLT
5.	Louis Appiah Gyekye	Senior Research Assistant	HND Statistics BSc Statistics

S/N	NAME	RANK/DESIGNATION	QUALIFICATION
6.	Millicent Oppong	Senior Admin. Assistant	HND Secretaryship and Management Studies
7.	Josephine Sonday	Research Assistant	HND Statistics HND Statistics

Activities in DRIPTT

DRIPTT is committed to ensuring that applied research in ATU is conducted most effectively and efficiently by providing the needed support services and by extension, identifying, developing, and protecting ATU's intellectual property and promoting technology transfer with the public and private sector.

The mission of DRIPTT is to provide effective and efficient research and innovation support services that are consistent with world-class universities to staff and students in ATU.

The core functions of DRIPTT include the following:

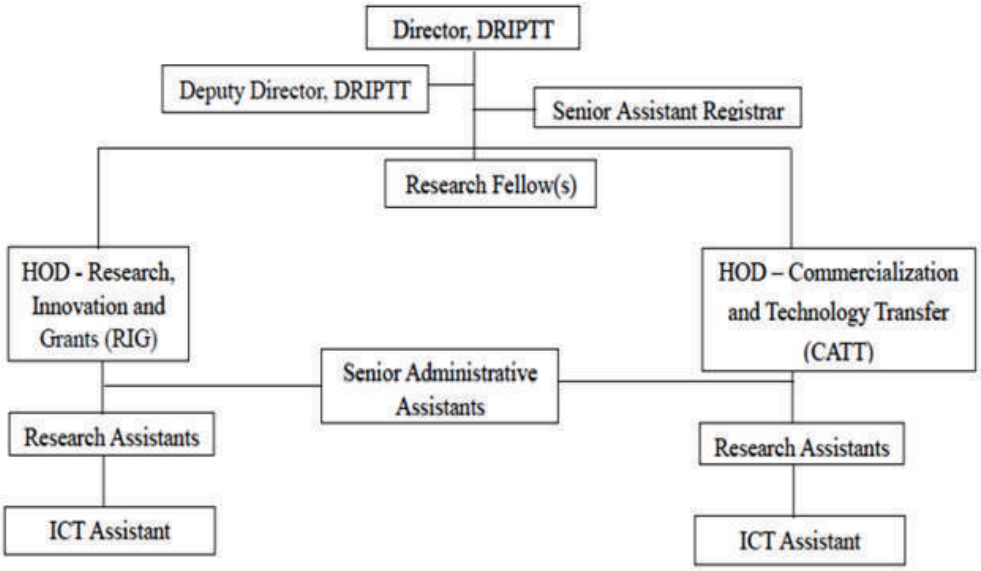
- Sourcing for funding for academic research, inventions, and other innovative activities.
- Assisting staff to write proposals to source for funding (either internally or externally) for research projects or activities.
- Informing staff and students about research opportunities.
- Organizing workshops and seminars on how to plan, conduct, publish and present their research results and innovations.
- Providing a platform for presenting research, inventions, and other innovative findings to the public.

DRIPTT Board

In accordance to the ATU Statutes (2018), the DRIPTT functions through a Board which is composed of the following:

- Director
- Deputy Director(s)
- One representative of each Faculties/Schools/Institutes
- Secretary to the Board who shall not be below the rank of Senior Assistant Registrar

DRIPTT Organogram



APPENDIX A - SUMMARY OF PUBLICATION PER FACULTY

FACULTY OF ENGINEERING

TABLE 1: FACULTY OF ENGINEERING

DEPARTMENT	PUBLICATIONS IN HIGH IMPACT REFEREED JOURNALS AND JOURNALS INDEXED BY WEB OF SCIENCE AND SCOPUS			TOTAL PER DEPT.	PUBLICATIONS IN REFEREED JOURNALS			TOTAL PER DEPT.	PUBLICATIONS IN REFEREED CONFERENCE PROCEEDINGS INDEXED BY WEB OF SCIENCE AND SCOPUS			TOTAL PER DEPT.	PUBLICATIONS IN REFEREED CONFERENCE PROCEEDINGS			TOTAL PER DEPT.	PUBLICATIONS IN BOOK CHAPTERS			TOTAL PER DEPT.
	2019	2020	2021		2019	2020	2021		2019	2020	2021		2019	2020	2021		2019	2020	2021	
Civil Engineering	8	8	9	25	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
Electrical/ Electronic Engineering	3	5	3	11	0	1	0	1	4	0	7	11	0	1	0	1	0	0	0	0
Mechanical Engineering	17	12	3	32	0	0	0	0	0	0	2	2	0	2	0	0	0	0	0	0
FACULTY TOTAL	28	25	15	68	0	1	0	1	4	0	9	13	0	2	0	2	0	0	0	0

FACULTY OF APPLIED SCIENCES

TABLE 2: FACULTY OF APPLIED SCIENCES

DEPARTMENT	PUBLICATIONS IN HIGH IMPACT REFEREED JOURNALS AND JOURNALS INDEXED BY WEB OF SCIENCE AND SCOPUS			TOTAL PER DEPT.	PUBLICATIONS IN REFEREED JOURNALS			TOTAL PER DEPT.	PUBLICATIONS IN REFEREED CONFERENCE PROCEEDINGS INDEXED BY WEB OF SCIENCE AND SCOPUS			TOTAL PER DEPT.	PUBLICATIONS IN REFEREED CONFERENCE PROCEEDINGS			TOTAL PER DEPT.	PUBLICATIONS IN BOOK CHAPTERS			TOTAL PER DEPT.
	2019	2020	2021		2019	2020	2021		2019	2020	2021		2019	2020	2021		2019	2020	2021	
Applied Mathematics and Statistics	2	1	2	5	1	4	3	8	0	0	0	0	0	0	0	0	0	0	0	0
Computer Science	2	2	4	8	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	1
Science Laboratory Technology	1	7	3	11	1	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0
Medical Laboratory Technology	5	4	5	14	2	3	0	5	0	0	0	0	0	0	0	0	0	0	0	0
FACULTY TOTAL	10	14	14	38	4	10	3	17	0	0	0	0	0	0	0	0	0	0	1	1

FACULTY OF BUILT ENVIRONMENT

TABLE 3: FACULTY OF BUILT ENVIRONMENT																				
DEPARTMENT	PUBLICATIONS IN HIGH IMPACT REFEREED JOURNALS AND JOURNALS INDEXED BY WEB OF SCIENCE AND SCOPUS			TOTAL PER DEPT.	PUBLICATIONS IN REFEREED JOURNALS			TOTAL PER DEPT.	PUBLICATIONS IN REFEREED CONFERENCE PROCEEDINGS INDEXED BY WEB OF SCIENCE AND SCOPUS			TOTAL PER DEPT.	PUBLICATIONS IN REFEREED CONFERENCE PROEEDINGS			TOTAL PER DEPT.	PUBLICATIONS IN BOOK CHAPTERS			TOTAL PER DEPT.
	2019	2020	2021		2019	2020	2021		2019	2020	2021		2019	2020	2021		2019	2020	2021	
Building Technology	0	0	2	2	0	1	0	1	3	1	1	5	0	0	0	0	0	0	0	0
Interior Design and Upholstery Technology	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
FACULTY TOTAL	0	0	2	2	0	1	0	1	3	1	1	5	0	1	0	1	0	0	0	0

FACULTY OF BUSINESS

TABLE 4: FACULTY OF BUSINESS

DEPARTMENT	PUBLICATIONS IN HIGH IMPACT REFEREED JOURNALS AND JOURNALS INDEXED BY WEB OF SCIENCE AND SCOPUS			TOTAL PER DEPT.	PUBLICATIONS IN REFEREED JOURNALS			TOTAL PER DEPT.	PUBLICATIONS IN REFEREED CONFERENCE PROCEEDINGS INDEXED BY WEB OF SCIENCE AND SCOPUS			TOTAL PER DEPT.	PUBLICATIONS IN REFEREED CONFERENCE PROEEDINGS			TOTAL PER DEPT.	PUBLICATIONS IN BOOK CHAPTERS			TOTAL PER DEPT.
	2019	2020	2021		2019	2020	2021		2019	2020	2021		2019	2020	2021		2019	2020	2021	
Accounting and Finance	0	0	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	0	0
Management and Public Administration	0	0	1	1	2	6	1	9	1	0	0	1	0	0	0	0	0	0	0	0
Marketing	2	6	7	15	1	1	2	4	0	0	0	0	0	0	0	0	0	0	0	0
Procurement and Supply Chain Management	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACULTY TOTAL	2	6	10	18	3	9	4	16	1	0	0	1	0	0	0	0	0	0	0	0

FACULTY OF APPLIED ARTS

TABLE 5: FACULTY OF APPLIED ARTS																				
DEPARTMENT	PUBLICATIONS IN HIGH IMPACT REFEREED JOURNALS AND JOURNALS INDEXED BY WEB OF SCIENCE AND SCOPUS			TOTAL PER DEPT.	PUBLICATIONS IN REFEREED JOURNALS			TOTAL PER DEPT.	PUBLICATIONS IN REFEREED CONFERENCE PROCEEDINGS INDEXED BY WEB OF SCIENCE AND SCOPUS			TOTAL PER DEPT.	PUBLICATIONS IN REFEREED CONFERENCE PROEEDINGS			TOTAL PER DEPT.	PUBLICATIONS IN BOOK CHAPTERS			TOTAL PER DEPT.
	2019	2020	2021		2019	2020	2021		2019	2020	2021		2019	2020	2021		2019	2020	2021	
Hotel, Catering and Institutional Management (HCIM)	0	1	0	1	1	3	1	5	0	0	0	0	0	0	0	0	0	0	0	0
Fashion Design and Textiles	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
Liberal Studies and Communication Technology	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0
FACULTY TOTAL	0	1	0	1	1	4	2	7	0	0	1	1	0	0	0	0	0	0	0	0

UNIVERSITY LIBRARY

TABLE 6: UNIVERSITY LIBRARY

DEPARTMENT	PUBLICATIONS IN HIGH IMPACT REFEREED JOURNALS AND JOURNALS INDEXED BY WEB OF SCIENCE AND SCOPUS			TOTAL PER DEPT.	PUBLICATIONS IN REFEREED JOURNALS			TOTAL PER DEPT.	PUBLICATIONS IN REFEREED CONFERENCE PROCEEDINGS INDEXED BY WEB OF SCIENCE AND SCOPUS			TOTAL PER DEPT.	PUBLICATIONS IN REFEREED CONFERENCE PROEEDINGS			TOTAL PER DEPT.	PUBLICATIONS IN BOOK CHAPTERS			TOTAL PER DEPT.
	2019	2020	2021		2019	2020	2021		2019	2020	2021		2019	2020	2021		2019	2020	2021	
UNIVERSITY LIBRARY	0	3	1	4	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	3	1	4	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0



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Accra Technical University
Public Affairs Directorate
Email: info@atu.edu.gh
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Tel: 0332095371