NAYA, JAMES MBABILA

Biomedical Engineering || Ghana || nayajames2002@gmail.com || +233594434741 || https://nayajames.site

EDUCATION

University of Ghana   Legon, Ghana

Bachelor of Science, Biomedical Engineering | First Class Honours   *Expected Graduation: February 2026*
GPA [3.8 / 4.0]

Capstone Project: Design of Novel Aspirator Connector for Fluid Evacuation during Cesarean Sections

Relevant Coursework: *Medical Signal & Image Processing, Biophotonics, Bioinstrumentation, Biomedical Engineering Systems, Telemetry and Telemedicine, Nanotechnology, Medical Physics, Bioinformatics, Tissue Engineering, Biomechanics, Numerical Methods*

Honors & Leadership: *Dean's Honor List; OBED Fellow; President, GSBE-UG; Speaker of Parliament, ESUG; Electoral Commission Chair, ESUG*

Nandom Senior High School   UWR, Ghana

General Science Program | WASSCE Aggregate: 9   *2018 - 2021*

Highlights: School Principal Contestant, National Science & Maths Quiz (NSMQ 2021); Contestant,
Senior High School Renewable Energy Challenge (SHSREC 2021); Health Prefect (2020/2021)

EXPERIENCE

Echo Change   Kuala Lumpur, Malaysia

Fully-Funded Global Delegate, Future Action Summit Malaysia 2025 | Nov 27 – 30, 2025

- Selected as one of the top ten fully-funded participants from a global pool of thousands of applicants.
- Led working group on Medical Technology and Policy, contributing to the development of the Post-2030 Youth Charter for Global Development.
- Engaged in discussions on Sustainable Development Goals (SDGs) with international changemakers and leaders.
- Participated in workshops, simulations, and cultural exchanges to advance youth-driven solutions for sustainability.

OBED Fellowship   Korle Bu Teaching Hospital, Accra

2024 Fellow, Global Health Design Initiative, University of Michigan & University of Ghana   *Aug 2024 – Sep 2024*
- Conducted a comprehensive needs assessment within the Obstetrics and Gynecology Department through ethnographic observation of surgeries and clinician ward rounds, complemented by interviews and stakeholder engagements to identify medical and engineering challenges.
- Assessed 60 unique problems, developed design specifications, and selected one for a capstone project.
- Supervised by Ing. Prof. Elsie Effah Kaufmann, Dr. Claude Fiifi Hayford, Dr. Dhanalakshmi Thiyagarajan (University of Michigan), Prof. Julia Kramer (University of Michigan)

Komfo Anokye Teaching Hospital   Kumasi, Ghana
Biomedical Engineering Intern   *May 2023 - Aug 2023 & Feb 2024 – Apr 2024*
- Participated in calibrating, troubleshooting, servicing, repairing, and maintaining medical equipment including X-ray, MRI, ventilators, dialysis and anesthesia machines.
- Programmed and deployed a medical equipment inventory software (EquiBase) for the Biomedical Engineering Department to assist in device inventory management.

Powerhouse Hospital   Kumasi, Ghana
  Medical Laboratory Intern   *Oct 2022 – Dec 2022*
  - Performed laboratory analyses on biological samples (hematology, clinical chemistry, microbiology, serology) and conducted procedures such as blood cross-matching and microscopic examinations using diagnostic equipment to support patient diagnoses.

Lumba Vehicle Spraying Shop   Suame Magazine, Kumasi, Ghana
  Paint Technician Apprentice   *2013 - 2021*
  - Progressed from preparation tasks to independently executing vehicle painting projects and customer engagement.

RESEARCH

- Computer Vision-Based Health Status Assessment and Transmission of Ocular Images: The Na-β iPlatform (Course Project, BMEN 416, Telemetry and Telemedicine, *Jun 2025 – Oct, 2025*)
- Design of Novel Aspirator Connector for Fluid Evacuation during Cesarean Sections (Course Project, BMEN 400, Capstone Design, *Nov 2024 – Aug 2025*)
- Using Generative AI to Study the Molecular Structure of Plant Metabolites Present in Locally Produced Herbal Medicines used for treating malaria (Mini-Ph.D. Program, Reachsci, USA, *Nov 2023 – Jul 2024*)
- Evaluating Antimicrobial and Pharmacokinetic Effect of Using Cyanogenic Glycosides from Cassava for Potential Applications in Human-Machine Interface (HMI) Infections (Course Project, BMEN 315, Research Methods, *Oct 2022 - Dec 2023*)
- Design of a Biosand Filter for Water Purification and Sustainability (Course Project, BMEN 306, Design and Selection of Biomaterials, *May 2024 - Aug 2024*)
- Design of an Elbow Splint for Patients with Cerebral Palsy (Course Project, BMEN 306, Design of Mechanical Systems, *May 2024 - Aug 2024*)
- Design of an Echolocation Glasses for the Blind (Course Project, BMEN 202, Introduction to Biomedical Engineering, *March 2023 - Jun 2023*)

CONFERENCES & PRESENTATIONS

- **ICAST 2025 – 20th International Student Conference on Advanced Science and Technology Satellite** | *Online Session*

  Co-organized by Kumamoto University (Japan) and National Chiayi University (Taiwan)

  Oral Presentation | Dec 11, 2025

  "Design of Novel Medical Aspirator Connector for Cesarean Sections: Enhancing Efficiencies and Reducing Surgical Risks"

- **Medical Innovation Expo 2025** | Academic City University, Accra, Ghana

  Poster Presentation | Oct 2025

  "Computer Vision-Based Health Status Assessment and Transmission of Ocular Images: The Na-β iPlatform."

- **Advancing Computational Neuroscience Through Collaborative Learning** | *Global Webinar Series*

Moderator | Apr 2025

- o Moderated Days 4 & 5 of a 5-day international webinar series featuring speakers from University College London, University of Ghana, and Yale School of Medicine.
- o Supported by Allen Institute, Ghana Society of Biomedical Engineers, Ghana Neuroscience Society, and University of Amsterdam.

- **4th National Ghana Society of Biomedical Engineers Conference** | Accra, Ghana

  Poster Presentation | Oct 2024

  "Design of an Echolocation Glasses for the Blind." | **Awarded Best Project Presentation.**

LEADERSHIP & ACTIVITIES

Engineering Students Association of University of Ghana (ESUG)   Legon, Accra

Speaker of Parliament   *Nov 2024 – Sep 2025*

- Presided over parliamentary sessions for the 19th ESUG Administration during General Assemblies to facilitate productive legislative discourse and adherence to constitutional procedures.
- Facilitated policy approvals and resolutions for 1,000+ engineering students.

Electoral Commission Chair   *Sep 2023 – Aug 2024*

- Successfully conducted free, fair, and incident-free elections to select new executive members to replace the 18th ESUG Administration

2nd Deputy Electoral Commissioner   *Jun 2023 – Aug 2023*

- Assisted in conducting free and fair elections to select new executive members to replace the 17th ESUG Administration

Street Fund Global Foundation   Ghana

Head, Project Department   *Jan 2025 – Present*

- Lead strategic planning, implementation, and oversight of community-focused social impact initiatives.

Ghana Society of Biomedical Engineers – University of Ghana   Legon, Accra

President, GSBE- UG   *Aug 2023 – Aug 2024*

- Spearheaded the Ghana Society of Biomedical Engineers – University of Ghana (GSBE-UG) as its 2nd President and enhanced member engagement and organizational reach over a 1-year tenure.
- Designed and implemented diverse programs, including a peer mentorship initiative, Learning Space, 3 industrial field trips, multiple professional development seminars and pioneered the maiden Nationwide BME Webinar through a remarkable collaboration across 7 universities.

Science and Maths Club, Nandom Senior High School   Nandom, UWR, Ghana

Overseer   *2020 – 2021*

- Coordinated activities of the club including preparation for competitions and organizing internal competitions.

Nandom Senior High School   Nandom, UWR, Ghana

Health Prefect   *Mar 2020 – March 2021*

- Led health policies and coordinated student welfare initiatives.

Nandom Senior High School   Nandom, UWR, Ghana

- Vice President of the Southern Students Union
- Financial Secretary of the Upper East Students Union

AWARDS, FELLOWSHIPS & RECOGNITIONS

- Head of Department Recognition Award for Distinguished Leadership (July, 2025)
- Best Project Presentation Award, 4th National GSBE Conference (Oct, 2024) | Topic: *"Design of Echolocation Glasses for Visually Impaired Individuals"*
- Dean's Honor List (2023/2024 Academic Year), School of Engineering Sciences
- Educational Pathways International Scholarship (Jan 2022, Jan 2023, Oct 2023, Oct 2024) | approximately GH₵ 40,000.00 ($3,600.00 equivalent)
- Overall Best Student, Nandom Senior High School (2018/19 and 2019/20 Academic Years)

SKILLS, CERTIFICATES & INTERESTS

Technical:

Engineering: CAD (SolidWorks, Autodesk Fusion), Medical Equipment Maintenance, Engineering Design, Research, Laboratory Equipment Operation,

Technology: Python (Django, Scikit-learn, OpenCV, Data Science), MATLAB, Arduino, Proteus Design Suite, Machine Learning, SIEM, Cyber Security

Certificates:
- Google Advanced Data Analytics Certificate Badge (Coursera & Google, 2025)
- Google Project Management Professional Certificate Badge (Coursera & Google, 2024)
- Hospital Planning & Design and Equipment Management (Hospital Engineering Academy, November 2024)
- Particle Physics: An Introduction (Coursera & Université de Genève, Nov 2023)
- Quantum Computing (Qubit by Qubit, The Coding School & IBM, Oct 2022 - Apr 2023)
- Virtual Immersion in Biomedical Engineering (Worcester Polytechnic Institute, Summer Program 2022)

Membership in Professional Associations
- Ghana Institution of Engineering | Student Member (2024-Present)
- The Field Engineer | Student Member (2023-Present)
- Elsie Effah Kaufmann Foundation | Volunteer (2023-Present)
- Vispad Institute of Technology, Ghana | Member and Teaching Assistant, (2022-Present)

Featured in Media Outlets
- NSMQ Superstar Spotlight by Prof. Elsie Effah Kaufmann for excellence. → LinkedIn Post
- Life Studying Biomedical Engineering in Africa → The Field Engineer Article
- GSBE-UG Healthcare Revolution → Elevate HTM Post
- Hybrid Power Plant Presentation at the SHS Renewable Energy Challenge → Home Radio Post
- Quantum Computing Capstone Project Showcase → YouTube Video

Interests: STEM documentaries, Leadership, History, Poetry, Reading

Language: English (Official Language), Local Languages: Nabdam (fluent), Twi (fluent)