


Ibrahim O. Jimoh

Artificial Intelligence & Robotics

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RESEARCH INTEREST

Human-robot interaction, social robotics, robot learning, robot perception, reinforcement learning

EDUCATION

Master of Science, Artificial Intelligence, *Carnegie Mellon University*

Jul 2023 – May 2025 | Pittsburgh, USA

Distinction

Specializations: Robotics, Machine Learning, Deep Learning, NLP

Courses: Applied Stochastic Processes, Introduction to Deep Learning, Cognitive Robotics, Humanoid Robotics and

Cognition, Data Inference and Applied Machine Learning, Machine Learning for Engineers, AI System Design, Principles and

Applications of AI, Research Methods

Bachelor of Engineering, Computer Engineering, *Federal University of Technology*

Jul 2015 – May 2021 | Minna, Nigeria

Specialization: Software and Hardware Engineering

RESEARCH EXPERIENCE

Research Assistant | AI Robotics Laboratory, *Culturally Sensitive Social Robotics*

Jun 2024 – present | CMU

- Investigating culturally sensitive robot behaviors through ethnographic research and identifying interaction patterns that are socially and culturally acceptable in Africa as a case study.
- Developed and implemented a behavior tree Domain Specific Language (DSL) for use case scenarios interaction of a robot with humans.
- Developing a software module for robot localization to determine its pose in a cartesian world frame of reference by a combination of relative and absolute position estimation. Relative position estimation is achieved through odometry and the robot's inertial measurement unit, while the absolute position estimation is achieved by triangulation using ArUco markers as landmarks. We also investigate the use of Scale Invariant Feature Transform (SIFT) and YOLO for the development of functionality for the landmark recognition.

Research Assistant | Computer Engineering Laboratory,

Jan 2021 – Sep 2021 | FUTMinna


Computer Vision-based Driver Assistant and Drowsiness Detection System for Road Safety

- Investigated the use of computer vision algorithm for developing system to better enhance vehicular road safety.
- Carried out survey and acquired statistics on vehicular road accident reports.
- Developed an in-vehicle installable system for detecting vehicle-driver drowsiness while driving with capabilities to trigger a sound alarm and send distress signal containing driver and vehicle information to nearest road safety authority. The system uses Histogram of Oriented Gradient (HOG) facial predictor algorithm and eye aspect ratio for eye monitoring.

ABSTRACT, POSTER PRESENTATION, & PUBLICATION


Abstract

I. Jimoh, H. Egbay, C. Osano, T. Tefferi, and D. Vernon, "Behavior Trees for Culturally Sensitive Social Robots: African Culture Case Study", Robotics in Africa Forum at IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2024. Available:

https://cssr4africa.github.io/abstracts/2024_Robotics_in_Africa_Forum_IROS_Jimoh_et_al_abstract.pdf 


Poster Presentation

A. Akinade, D. Barros, M. Danso, Y. Haile, E. Birhan, B. Shimelis Girma, C. Osano, P. Ranchod, M. Richard, B. Rosman, **I. Jimoh**, T. Taye Tefferi, D. Vernon, "Culturally Sensitive Social Robotics for Africa", Cultural Robotics: Diversified Sustainable Practices, Workshop at IEEE/ACM HRI 2025.

Available: https://cssr4africa.github.io/posters/2025_Cultural_Robotics_Workshop_Akinade_et_al_poster.pdf 

Publication

Y. Underdue Murph, A. Avoka, **I. Jimoh**, and F. Rurangwa, "Breaking Mental Health Silence: Men from Different Cultures and Generations",

Case Studies in International Education, Vol.5 No. 2, Dec. 2024. Available: <https://www.csiepub.org/index.php/csie/article/view/165> 

WORK EXPERIENCE

Data Scientist, *Freelance*

Jan 2024 – present

- Conducted data cleaning, preprocessing, and analysis on diverse datasets, including survey and demographic data, to generate actionable insights, resulting in a reduction in data preparation time and improved data accuracy by 15%.
- Designed and implemented predictive models and supervised learning algorithms, achieving an accurate rate in forecasting key trends and aligning results with stakeholder needs and project objectives.
- Developed interactive dashboards and visualizations using Power BI, matplotlib, and seaborn, leading to a 30% increase in stakeholder engagement and improved decision-making.
- Collaborated with clients and cross-functional teams to understand data needs, ensuring tailored and actionable outputs aligned with project goals.

Data Analyst, *Malhub Technologies*

Jun 2023 – Dec 2023 | Nigeria

- Analyzed company data and performed statistical analysis using machine learning methods such as linear and logistic regression to uncover actionable insights.
- Developed detailed, data-driven reports that highlighted key trends and findings, facilitating better decision-making across teams.
- Utilized Power BI and Microsoft Excel to create clear, visual representations of data, improving stakeholders' understanding of complex datasets.
- Streamlined reporting processes, resulting in a 20% reduction in report generation time and increased efficiency for data-driven initiatives.

Software Engineer (Contract), *Optimus Bank*

Jan 2023 – Jun 2023 | Nigeria

- Led my team as Project Lead, coordinating project timelines, ensuring deliverables were met, and fostering collaboration between development and business units.

- Served as Scrum Master, facilitating daily stand-ups, sprint planning, and retrospectives, resulting in improvement in team productivity and task completion rates.
- Designed and developed an API for customer support virtual assistant, enabling seamless integration with the bank’s existing infrastructure and improving service efficiency.
- Maintained data security and adhered to industry compliance standards, ensuring 100% regulatory compliance with banking security protocols.

Computer Hardware and Software Technician, *CanaanLand Technologies* May 2016 – Dec 2020 | Nigeria

- Maintained, troubleshot, and fixed computer systems - desktop pc, laptops, and mobile devices for corporate and individual clients.
- Provided technical support and software solutions for clients.
- Gained a lot about customer relations during the time spent in this role

TECHNICAL SKILLS

Programming Python, C, C++, C#, Java, JavaScript	AI Pandas, Numpy, Scikit-Learn, Matplotlib, Seaborn, PyTorch, Tensorflow, OpenAI API, RAG, Langchain
Robotics ROS, Gazebo, OpenAI Gym	Analytics Tools PowerBi, MS Excel
Cloud Technology AWS, GCP, Docker, Kubernetes	Database MySQL
Frameworks Django, .Net	Web HTML, CSS, Bootstrap, PHP
Developer Tools Git, Github, Linux, Ubuntu, Unity3D, LaTeX	Embedded Systems Arduino Programming, RaspberryPi
Soft Skills Integrity, Leadership, Communication and Presentation, Collaboration, Creativity.	

HONORS, AWARDS & RECOGNITION

HRI Conference Grant Award, <i>ACM SIGAI</i>	2025
Master's Degree Scholarship, <i>Mastercard Foundation</i>	2023
Recognition Best School Representative, <i>International Mathematics Olympiad (IMO)</i>	2015

SELECTED PROJECTS

Deep Reinforcement Learning-Based Mobile Robot Navigation in Social Spaces Developed a deep reinforcement learning-based framework for mobile robot navigation in social spaces that jointly models both human-robot and human-human interactions. Implemented a baseline model architecture that uses a self-attention mechanism. By leveraging the capabilities of transformer models, we proposed a transformer-based architecture adept at capturing long-range dependencies and can process sequences of data more effectively, which is crucial for modeling complex interactions in dynamic crowds.	Sep 2024 – Dec 2024
LLM-Based Investment Advisor using Retrieval-Augmented Generation (RAG) Architecture Developed a scalable llm-powered investment advisory platform that democratizes financial advising and guidance, including risk profiling, asset allocation, portfolio forecasting, and personalized recommendations.	Sep 2024 – Dec 2024
Synchronizing Multimodal Behaviors and The Eva Robot Head: An Open-Source Project Tools & Software: Unity, VR Headset, Fusion 360, Ultimaker cura, 3D Printer, Raspberry pi, Servo motors, Python language. Aim: To build a responsive and expressive humanoid robot head and synchronize its multimodal behaviors. Performed 3D hardware printing of robot parts, assembled the robot head with printed parts and associated hardware components e.g. servo motors, and improved on an open-source python code for robot head control. Implemented facial expression recognition and mimicking by the robot head using neural network model.	Sep 2023 – Dec 2023

EXTRACURRICULARS

IEEE Student Branch, <i>Interim Chair, Vice Chair</i> • Coordinating the activities of the branch on campus. • Organized and participated in the IEEEExtreme 18.0 coding competition challenge. • Drafted the student branch's plan annual report that includes the branch's activities to be carried out and funding awards and opportunity.	May 2024 – present CMU
Google Developer Groups (GDG), <i>Member</i> • Participated in weekly and quarterly meetups, workshops, and coding sessions. • Contributed to hands-on projects, hackathons, and project development. • Attendance and Participation in GDG local events.	Jan 2020 – present
Research Club, <i>Community Engagement Manager</i> • Bringing together the campus research community and advocating for research engagement and opportunities. • Engaged with faculty and students and established a faculty-student collaboration on research. • Organized workshops, panel sessions, and research talks both from faculty and external invited guest lectures, including PhD candidates	Dec 2023 – Dec 2024 CMU
Afrisnet Graduate and Post-Graduate Committee, <i>Communications Officer</i> • An international community of African graduate and postdoctoral scholars that promotes academic and professional success of African early career researchers.	Jun 2024 – present

- Organized and communicated career and professional development workshops.
- Facilitated information sessions in research fellowships, job opportunities etc

Solid Africa, Volunteer

Dec 2023

- A non-profit organization that provides aid to the most vulnerable hospital patients in Rwanda.
- Made donations, and visitation, and was actively involved in the distribution and logistics process of reaching out to patients.

PROFESSIONAL AFFILIATIONS

Member, *Association of Computing Machinery (ACM)*

Graduate Member, *Institute of Electrical and Electronics Engineers (IEEE)*

Graduate Member, *IEEE Robotics and Automation Society (IEEE-RAS)*

Graduate Member, *Nigeria Society of Engineers (NSE)*

INTERESTS

I am a ping-pong lover. Fascinated by the hand-eye coordination and reflexes involved in playing it. When its ping-pong time, its me time.