

Temitope I. Amosa

No. 38, Jalan Lakeville 33, Bandar Universiti, Seri Iskandar, Malaysia

(+60) 1154263835 • amosatemitopeibrahim@gmail.com • <https://github.com/hebrotem>

SUMMARY

I have a strong background in computer engineering and a profound passion for machine learning and data science. I have over four (4) years' experience programming in python, and C, and one year of expertise in executing ML/DL-based computer vision solutions for various industrial and medical applications. I have developed various machine learning-based models to increase the accuracy and robustness of object detection, classification, tracking in video from various camera perspectives and views. I am keen to join your research lab under your supervision as a Ph.D. candidate to carry out quality research that will result in a new theory and method for visual understanding of images

EDUCATION

Master of Science Candidate – medical Natural Language Processing Department of Electrical and Electronic Engineering YUTP-FRG Graduate Research Assistant	Universiti Teknologi PETRONAS, Malaysia (Expected 2023)
Bachelor of Engineering – Embedded System and Automation Department of Computer Engineering CGPA – 4.0/5.0	University of Ilorin, Nigeria (Awarded September 2019)

SKILLS

- **Image processing and Computer vision**

Spatial Filtering and Edge detection, Image Segmentation, and Region Analysis – Python packages (OpenCV, Sci-kit-image, PIL) & MATLAB toolboxes (image processing toolbox & computer vision toolbox) – Data annotation and visualization (CVAT, Labelme, roboflow, FIFTYONE) – Image thresholding with meta-heuristic optimization – MATLAB toolboxes (image processing toolbox, optimization toolbox and global optimization toolbox).

- **Deep learning and classical machine learning**

Neural network and Convolutional neural network (TensorFlow, PyTorch, PyTorchLightning) – Vision transformer network (transformers, timm) – Data wrangling, Mining, and Exploratory analysis (pandas, Pandas Profiling) – Regression predictive modeling (CatBoostRegressor, XGBoost Regressor, SVR, Linear Regressor, etc.) – Classification predictive modeling (logistic regression, Naïve Bayes Classifier, SVM, KNN, neural network, gradient boosting, MLP, etc.) – Basic MLops (Docker, Linux, REST, AWS).

RESEARCH PROJECTS UNDERTAKEN

- ****visual tracking and re-identification of small fast-moving objects in aerial imagery.**
- ****Integrating zero-shot transfer learning in visual tracking of multiple targets.**
- NLP-based solution for disambiguation of ambiguous clinical acronyms in Pediatric EHR
- Performance Evaluation of two deep learning-based feature extraction methods in visual object tracking applications.
- Investigating the Impact of Illumination and Viewpoint Variations on Transformer-based Person Re-Identification
- Multi-scale Attention for Diabetic Retinopathy Detection in Retinal Fundus Images

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- Investigating the Influence of High-Performance Feature Learning for Zero-shot-Based Visual Object Tracking of Industrial Robot
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EXHIBITION/ LECTURES

- 2023 Delivered a Training Program organized by the Association of International (AIS)-UTP on Python Programming for Beginner and Introduction to Data Science and Machine Learning. The training include:
- Introduction to python covering variable declaration and assignment, data types, program flow control, etc.
 - Exploration of list, tuple, dictionary, and set.
 - Step-by-step introduction to Iterator and generator: using `__iter__()` and `__next__()` dunder methods.
- 2022 Delivered a Training Program for UTP student on PCB Designing with Autodesk EAGLE organized jointly by IEEE UTP Student Branch and IEEE RAS Malaysia Chapter. The training include:
- Introduction to EAGLE and how to get up and running with the software.
 - Introduction to EAGLE Environment, libraries, and editors.
 - Components capturing with Autodesk Eagle Schematic editor.
 - PCB design with Autodesk Eagle PCB editor.
- 2022 Training Program for New Teaching Assistance, Universiti Teknologi PETRONAS
- Trainer for new Graduate Assistants for May 2022 Semester.
 - Provided an intensive guidance on student attendance policies, assignment and mini-project grading, and support services during the course.
- 2019 Engineering Project Exhibition (EPEX) 2019 series, University of Ilorin
EPEX is an annual competition organized and hosted by Nigerian Universities Students' Association (NUESA), University of Ilorin Branch. During the 2019 series, my undergraduate final year project team and I presented our work on "Automated Real-time Meteorological data logger and Analytic system".

RESEARCH EXPERIENCE

- 2023 Graduate Research Assistant – Institute of Health & Analytics, Universiti Teknologi PETRONAS
- Responsible for building and training deep learning models for automated sense resolution of ambiguous acronyms in EHR. The task charged with also includes investigation to improve the performance of classifier.
- 2022 Graduate Research Assistant – Institute of Health & Analytics, Universiti Teknologi PETRONAS
- Responsible for building and training deep learning model for automatic detection of diabetic retinopathy (DR) in digital fundus image and optical coherence tomography

(OCT). The involve scientific investigation to develop a Transformer-based automatic DR and DME detector.

2021 Research Intern – Power Systems & Energy Management Lab, University of Ilorin
Responsible for the design and execution of low- and high-level feature extraction algorithms for detection and description of important features in Satellite Imagery datasets for roof-top solar potential estimation.

TEACHING EXPERIENCE

2022-2023 Teaching Assistant –Structured C Programming with Linux, EE Department, UTP
Responsible for preparing and assigning course materials; supervising and managing laboratory session; developing and administering quizzes and mid-term tests. Also, undertook other administrative duties as requested by the course lead.

2022-2023 Lab Instructor – Information/Computer Security, Computer Engineering Department, UTP
Responsible for demonstrating the use of Cisco packer tracker and Netsim to student. Conducting software tutorial twice a week, grading simulation exercises and assignments including distributing unique network design projects as a hands-on practicum with 13 students.

2022 Teach Assistance – Image processing and Computer Vision with Python, EE Department, UTP
Assisted in writing the self-instructional materials for the course. Demonstrated the use of different python libraries such OpenCV, Scikit-image, Tensorflow and Keras API, PyTorch etc. for library image processing and computer vision.

RELEVANT EXPERIENCE

2019 - 2020 Graduate Engineer – National Youth Service Corps/Transmission Company of Nigeria
For national youth service at Transmission Company of Nigeria's Dutse work center, I took part in the design, simulation, and analysis of load flow. Also, I was part of the engineering team that sees to the rectification of power transmission faults, as well as installation and maintenance of three-phase intelligent transformers at the center.

2020 Consultant Engineer – Center for Open and Distant Learning, University of Ilorin, Nigeria
As part of the engineering consultant team, for the setting up of computer-based test (CBT) centers for the University of Ilorin's Center for Open and Distant Learning, my duties were to thorough examine and analyze different computer and surveillance camera network designs and simulations submitted by engineering companies.

2018 IT Intern – Student Industrial Work Experience Scheme (SIWES)/ Egbin Power Plc., Lagos
As a student intern at Egbin power plc.'s IT department, my responsibilities include installing and maintaining computer systems, resolving internet and network access issues, providing network printer support, meeting with staff to provide one-on-one technical assistant as requested, providing training to staff on software and hardware use, determining causes of computer/IP phones/software/network malfunctions

through evaluation and testing and resolution via modifications, repair, or external support assistance.

2017 - 2019 IT Intern – Volunteer/University of Ilorin Network Operation center
As a volunteer student intern at the University of Ilorin's Network Operation Center, I was attached to the network engineering team responsible for setting up, developing, and maintaining computer networks within the University. The team also offers network-related support to students and staffs, which may involve one-on-one meetings with staff/student to provide technical assistant as requested.

LEADERSHIP EXPERIENCE

2022 Vice-President – Association of International Student (AIS), Universiti Teknologi PETRONAS

AIS is the only student society in UTP for all international students on campus. As the vice-president of the society, I worked along other executives, including the president to ensure effective running of the association. Also, we work alongside with the management on various matters affecting the welfare of all international students.

2022 Secretary – E32S PG wing, Universiti Teknologi PETRONAS

Electrical and Electronic Engineering Student Society (E32E) PG wing is the departmental student society for UTP EEE students. As the secretary of the society, I reported directly to the society chair, and I was charged with the responsibilities of documenting all the society activities including minutes of all meetings.

2020 Secretary – Business Committee, MCAN/National Youth Service Corps, Jigawa State
Reported directly to committee chair and charged with the responsibilities of documenting all the minutes of the meetings. Maintained all NYSC Jigawa State investment records. Also, was part of the team overseeing the on-camp MCAN canteen during January NYSC orientation program in Fanisau camp.

2019 Chairperson – In-Camp Masjid Committee, MCAN/National Youth Service Corps, Jigawa State
Chaired the committee responsible for up keeping the NYSC Jigawa State orientation camp mosque at Fanisau. I reported directly to the MCAN staff adviser and charged with the duty of booking and organizing the mosques for any in-mosques Muslim programs including five daily prayers (Solat) and Friday prayers throughout the 30 days orientation program. Overseen together the secretary and other members of the committee the usage and proper return of mosques utilities including public address systems, the kettles, prayer mats, and other equipment.

HONORS/AWARDS

2022 Awarded Travel Grant to attend ECCV 2022 coming up in Tel Aviv in Israel

2022 Awarded Travel Grant to attend CVPR 2022 in New Orleans, USA

2022 YUTP-FRG Graduate Research Assistantship

Principal Investigator: Ir. Dr. Patrick Sebastian

- 2021 Universiti Teknologi PETRONAS Graduate Assistantship,
 awarded UTP GA Scheme for master's by research program July 2021 intake
- 2019 CESA's Most Innovative student Award,
 Computer Engineering Students' Association (CESA), University of Ilorin Branch

PUBLICATIONS/WORK IN PROGRESS

Journals

Amosa, T.I., Izhar, L.I., Sebastian, P., Ismail, I.B., Ibrahim, O. and Ayinla, S.L., 2023. Clinical Errors from Acronym Use in Electronic Health Record: A Review of NLP-based Disambiguation Techniques. *IEEE Access*, doi: 10.1109/ACCESS.2023.3284682.

Amosa, T. I., Sebastian, P., Izhar, L. I., Ibrahim, O., & Bala A. **(Under Review)**. Multi-Camera Visual Object Tracking: A Literature Review.

Amosa, T. I., Sebastian, P., Izhar, L. I., Ibrahim, O., & Bala A. **(Under Review)**. High-Performance Feature Learning for Zero-shot-Based Visual Object Tracking of Industrial Robot.

Bala A., Idris, I., Noryanti M., **Amosa, T. I.**, Diego, O., Saiq M.S., & Khaled, A.A **(Under Review)**. Artificial Intelligence and Edge Computing for Machine Maintenance: Review.

Conferences

Amosa, T.I., Sebastian, P., Izhar, L.I.B. and Ibrahim, O., 2022, October. A Comparative Study on Deep Feature Extraction Approaches for Visual Tracking of Industrial Robots. In *2022 IEEE Industrial Electronics and Applications Conference (IEACon)* (pp. 122-127). IEEE.

Amosa, T. I., Sebastian,P, Izhar, L.I., & Ibrahim, O. Investigating the Impact of Illumination and Viewpoint Variation on Transformer-based Person Re-ID. International Conference on Future Trends in Smart Communities (ICFTSC), Malaysia

LANGUAGES

Yoruba: Fluent

English: Proficient

REFERENCES

Available on request