# Obafemi Jinadu

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## SUMMARY

Doctoral Researcher with 2 years of industry experience and expertise in **Computer Vision**, **Multimodal Machine Learning**, and **Generative AI**.

## EDUCATION

**Tufts University**, Massachusetts, United States
**Ph.D. Electrical and Computer Engineering** (GPA: 4.0/4.0) Sep. 2021 - Dec. 2025
**M.Sc. Electrical and Computer Engineering** (GPA: 3.92/4.0) Sep. 2021 - May 2023
**Advisor:** Prof. Karen Panetta
**Tufts Recognition:** 2024 School of Engineering Award for Outstanding Academic Scholarship.
**Relevant Coursework**: Computer Vision, Machine Learning, Statistical Pattern Recognition, Machine-centric programming in C/C++, Software Engineering, Operating Systems.

**Obafemi Awolowo University**, Ile-Ife, Nigeria
**B.Sc. Electronic and Electrical Engineering** (GPA: 4.31/5.0) Jun. 2014 - Dec. 2019

## TECHNICAL SKILLS

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|---|---|
| **Programming Languages** | Python, C, C++, CUDA. |
| **Tools & Libraries** | PyTorch, TensorFlow, Hugging Face, Singularity(HPC), Docker. |
| **Others** | Git, Jira, PowerBI, LaTeX, UiPath. |

## PROFESSIONAL EXPERIENCE

**Tufts University**, Massachusetts, United States - R1 Research Institute Sep. 2021 - present
*Graduate Research Assistant - Vision & Sensing Systems Laboratory*

- Developing an image-text pair dataset with 100K images mapped to 1M text prompts for text-guided object detection in traffic analysis.
- Working on synthetic image-text data augmentation using diffusion and transformer-inspired models.
- Probing diffusion models and their applications in image enhancement to improve object tracking in low light.
- Achieved an 8% performance improvement in pose estimation by designing a state-of-the-art algorithm using High-Resolution networks and Vision transformers.
- Developed a deep learning algorithm for vehicle speed and traffic density estimation with a 0.7m/s error margin, integrated into an AI suite for highway traffic monitoring and anomaly detection.
- Achieved a 77.8% F1-Score in assessing building damage post-disaster by developing a semantic segmentation algorithm using satellite imagery.

**KPMG**, Lagos, Nigeria Mar. 2020 - Jul. 2021
*Data Scientist / Machine Learning Engineer*

- Increased customer retention by 35% through securing customer data and issuing targeted banking product recommendations using unsupervised learning and data anonymization.
- Automated data scraping on Nigerian FinTechs to inform national regulatory decision-making, using an RPA pipeline to remove human intervention and reduce daily process time by 7.4 hours.
- Modeled staff utilization, revenue, and KPI at individual, division, and unit levels for 1082 employees to provide KPMG partners with 100% visibility on the company's health.
- Developed "KPMG Sentilytics", a Twitter (X) sentiment analysis tool built with Python and PowerBI, which facilitated brand perception analysis and improved client customer satisfaction by 60%.
- Developed a COVID-19 model to track daily infection trends and monitor its impact on the Nigerian economy.

## PROJECTS

- Improved animal re-identification accuracy by 8% for 92 individual Amur tigers by building a deep-learning probabilistic model using Maximum A Posteriori (MAP) estimation to counter overfitting with limited data.

- Re-implementation of key deep learning algorithm papers in PyTorch, including Denoising Diffusion Probabilistic Models, Vision Transformers, Conditional Generative Adversarial Networks (C-GANs), and Diffusion-GANs.
- Reduced sentiment analysis error rate by 8.6% using Bag-of-Words features and models such as logistic regression, neural networks, and support vector machines on customer reviews from IMDb, Amazon, and Yelp.
- Built an interactive user interface to an operating system, a "shell" in C.
- Implemented a direct indexed file system on a simulated disk in C.

## PUBLICATIONS

**Conference Papers & Presentations**

- Oludare, V., Kezebou, L., **Jinadu, O**., Panetta, K. and Agaian, S., 2022, May. Attention-based two-stream high-resolution networks for building damage assessment from satellite imagery. In Multimodal Image Exploitation and Learning 2022 (Vol. 12100, pp. 224-239). SPIE
- **Jinadu, O**., Oludare, V., Rajeev, S., Kezebou, L., Panetta, K. and Agaian, S., 2023, June. Instant-level vehicle speed and traffic density estimation using deep neural network. In Multimodal Image Exploitation and Learning 2023 (Vol. 12526, pp. 125-138). SPIE.
- **Jinadu, O**., Rajeev, S., Panetta, K. and Agaian, S. An Impact Study of Deep Learning-based Low-light Image Enhancement in Intelligent Transportation Systems. In Multimodal Image Exploitation and Learning 2024 (Vol. 13033, pp. 154-171). SPIE. Project Github repository.

**Journal Papers**

- Sanghavi, F., **Jinadu, O.**, Oludare, V., Panetta, K., Kezebou, L. and Roberts, S.B., 2023. An Individualized Machine Learning Approach for Human Body Weight Estimation Using Smart Shoe Insoles. Sensors, 23(17), p.7418.

## HONORS & AWARDS

**Tufts University**, Massachusetts, United States

- 2024 School of Engineering Outstanding Academic Scholarship Award.
- 2024 IEEE Signal Processing Society (SPS) Scholarship Award.

**KPMG**, Lagos, Nigeria

- KPMG's Q1 Signals Repository Global Hackathon (3rd Place Winners) – KPMG Nigeria team lead. Feb. 2021.

**Obafemi Awolowo University**, Ile-Ife, Nigeria

- Petroleum Technology Development Fund (PTDF) National Scholarship 2016/2017, cumm. value: $10,000.
- Chevron/NNPC Joint Venture National Scholarship Merit Award 2015/2016 - cumm value: $2,000.

## LEADERSHIP & VOLUNTEERING

- IEEE-HKN (Eta Kappa Nu) Board of Governors member - 2024 Student Governor.
- Journal Reviewer for IEEE Transactions on Artificial Intelligence.
- Journal Reviewer for IEEE Transactions on Systems, Man and Cybernetics: Systems.
- Reviewer for 2022 Virtual IEEE International Symposium on Technologies for Homeland Security.
- Supervised and mentored computer Science and data science Tufts Seniors on their final year capstone projects.
- Societies: IEEE, IEEE-HKN, AAAS, NSBE, Black in AI (BAI), SPIE.