Ikechukwu Daniel Adebi

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Education

The University of Texas at Austin   **Austin, TX**
Ph.D. in Computer Science   *August 2023 - Present*
➢ Advisor: Kristen Grauman.
➢ Research Interests: Robotics, Computer Vision, Representation Learning, Reinforcement Learning.
➢ Relevant Coursework: Robot Learning, Generative Models in Machine Learning, Program Synthesis.

Massachusetts Institute of Technology (MIT)   **Cambridge, MA**
M.Eng. in Electrical Engineering and Computer Science   *January 2022 - June 2023*
S.B. in Computer Science and Engineering, GPA: 4.8/5.0   *September 2018 - May 2022*
➢ Advisor: John Fernandez.
➢ Concentration: Artificial Intelligence.
➢ Master's Thesis: "Landslide Susceptibility Prediction Adaptive to Triggering Events".

Research Interests

My broad research interests lie at the intersection of robotics, computer vision, representation learning, and reinforcement learning for the purposes of improving long-term planning and autonomy. I aim to improve an AI agent's ability to act, perceive, and learn in complex environments, and ensure that its goals will always align with human goals.

Publications

AMAGO-2: Breaking the Multi-Task Barrier in Meta-Reinforcement Learning with Transformers
Jake Grigsby, Justin Sasek*, Samyak Parajuli*, <u>Daniel Adebi</u>*, Amy Zhang, Yuke Zhu (* = equal contribution)
Conference on Neural Information Processing Systems (NeurIPS), 2024

Research Experience

UT Austin Computer Vision Group   **Austin, TX**
Graduate Research Assistant   *August 2024 – Present*
➢ Working under Prof. Kristen Grauman developing better methods for video understanding tasks, such as procedural understanding and video alignment.

Machine Intelligence through Decision Making and Interaction Lab (MIDI)   **Austin, TX**
Graduate Research Assistant   *August 2023 – May 2024*
➢ Worked under Prof. Amy Zhang developing better representations for training robots and other reinforcement learning agents to perform downstream tasks.

MIT Environmental Solutions Initiative (MEng Thesis)   **Cambridge, MA**
Graduate Research Assistant   *January 2022 – May 2023*
➢ Designed and implemented machine learning models to analyze and predict landslide probability from LIDAR data, modal satellite imagery, weather data, and geographic information. Worked in Python.
➢ Built and trained various kinds of segmentation models to produce landslide susceptibility maps for the region of Mocoa, Colombia.

MIT CSAIL   **Cambridge, MA**
Graduate Research Assistant in the Kellis Lab   *May 2022 – December 2022*
➢ Experimented with using graph variational autoencoders to learn representations for personalized Bayesian Networks in computational biology settings.

Undergraduate Researcher in the Distributed Robotics Lab   *September 2021 – February 2022*
➢ Developed and trained deep reinforcement learning models to teach a fixed-wing drone how to fly in a virtual environment while accomplishing subgoals. Worked in Unity, C#, and Python.
➢ Compared effects of utilizing transformer architecture to train fixed-wing agents using traditional RL methods.
➢ Trained models that outlasted previous agents trained on state-of-the-art algorithms on average by 50%.

MIT Media Lab   **Cambridge, MA**
Research Assistant in Camera Culture Group   *September 2021 – January 2022*
➢ Studied the effectiveness of GNN-based simulators to build systems that use microscopic-simulations in the loop along with conventional ML based macro-predictions, for improved forecasting.
➢ Improved computational efficiency by 80% compared to traditional agent-based simulations.

Industry Experience

IBM Research   **Yorktown Heights, NY**
AI Research Scientist Intern   *May 2023 – August 2023*
➢ Utilized reinforcement learning to fine-tune large language models to learn how to play the role of the "giver" (or describer) in the word game Taboo.
➢ Worked with the Trustworthy AI team under Kush Varshney.

Google   **Mountain View, CA**
Software Engineering Intern   *June 2022 – August 2022*
➢ Conducted experiments comparing various state of the art large language models (both internal to Google and open-source) to perform call transcript summarizations for advertisers working with Google Ads.
➢ Reduced call transcript report lengths by 80%, making it easier for advertisers to gain insights on their products.
➢ Led discussions in a biweekly machine learning reading group within our Google Ads sub-team regarding various research topics in NLP.

Software Engineering Intern (Virtual Internship)   *June 2021 – August 2021*
➢ Created an offline pipeline for the Google Lens team to extract output labels from random forest decision tree models to increase the confidence in classifying over 400 million user generated food images.
➢ Increased the confidence of the inference quality of 45% (180 million) of the user generated food images, with 5% (20 million) of these images having a significant increase in confidence.
➢ Developed a complete pipeline using C++ and other Google libraries.

Student Training in Engineering Program (STEP) Intern (Virtual Internship)   *June 2020 – September 2020*
➢ Collaborated with two other interns to develop a web application that helps people learn various, user-chosen topics quickly and efficiently by making information more accessible and digestible.
➢ Trained and implemented a Content-Based Recommendation System using word2vec to determine what topics align with user's interests, using over 38,000 unique words and phrases, and 15 million total words, as training data.
➢ Full stack development, using Python, Java Servlets and JUnit testing, JavaScript, HTML/CSS, and Google Cloud APIs.

IBM   **Cambridge, MA**

Software Engineering Intern   *May 2019 – August 2019*

➢ Developed a program that created and maintained product representations that sellers use to sell to IBM Clients.
➢ Used marketing information to send customers information about various products they may be interested in buying. Worked in Salesforce, Python, and Java.
➢ Combined machine learning with quantum computing using Python libraries such as Qiskit and Scikit-Learn.

Teaching Experience

The University of Texas at Austin   **Austin, TX**

Graduate Teaching Assistant   *August 2023 – April 2024*

➢ Teaching assistant for the class CS 371P: Object-Oriented Programming and CS 373 Software Engineering.
➢ Helped undergraduate students develop C++, Python, and object-oriented programming knowledge.

Massachusetts Institute of Technology   **Cambridge, MA**

Grader/Tutor   *September 2020 – May 2021*

➢ Graded assignments for MIT's Design and Analysis of Algorithms course.
➢ Taught students advanced algorithmic concepts to help them through this class.

Lab Assistant   *February 2020 – May 2020*

➢ Helped run labs for MIT's undergraduate machine learning class by working with students through exercises. Graded weekly assignments.

Honors and Awards

Fellowship Selections:
➢ National GEM Consortium Fellowship 2023.

Technical Skills

Programming: Python, C++, C#, Java, JavaScript, Terminal, HTML/CSS.
Software and Libraries: PyTorch, Scikit-learn, OpenAI gym, Tensorflow, Linux, Unity, Git.

Other Activities

Groups: MIT InterVarsity, Black Student Union, African Student Association, Nigerian Student Association.
Hobbies: Video games. Playing sports. Working Out. Taking walks from time to time.
Other Interests: Math, Philosophy, Christian Apologetics, Quantum Physics, Cosmology, Football (Fly Eagles Fly), and Basketball (Go Sixers).