

Emmanuel Adebayo

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EDUCATION

University of Delaware <i>Ph.D., Applied Mathematics (3.56/4.00)</i> • Relevant Coursework: Computer Vision, Introduction to Machine Learning, Numerical Linear Algebra, Numerical Analysis	Newark, DE <i>Aug. 2022 – Aug. 2027(Anticipated)</i>
University of Delaware <i>M.S., Applied Mathematics</i>	Newark, DE <i>Aug. 2022 – May 2024</i>
University of Lagos <i>B.S., Applied with Computational Mathematics</i>	Akoka, Lagos <i>Nov. 2015 – Dec. 2019</i>

SKILLS SUMMARY

Languages: MATLAB, Python, HTML/CSS
Developer Tools: PyCharm, Jupyter Notenook, Visual Studio Code
Libraries: OpenCV, NetworkX, NumPy, Matplotlib, Scikit-Learn

WORK EXPERIENCE

Graduate Teaching Assistant <i>University of Delaware</i> • Lead discussion sections for undergraduate mathematics courses, including Calculus II, Calculus III. • Hold weekly office hours to provide additional support and tutoring to students. • Assist in grading homework, quizzes, exams, and other assignments, ensuring timely and constructive feedback.	Aug. 2022 – Present Newark, DE
Graduate Research Assistant <i>University of Delaware</i> • Explored the applications of Wavelets basis in solving Inverse problems such as Fredholm Integral equation using Python and MATLAB	fall 2024 Newark, DE

PROJECTS EXPERIENCE

Image Processing and Transformation <i>CISC 642 - Computer Vision</i> • Implemented custom algorithms to estimate affine and perspective transformation matrices using Python and OpenCV • Used least squares and SVD methods to solve for the transformation matrices between corresponding points in original and transformed images • Developed functions for image reduction and expansion, implemented Gaussian pyramids, and constructed Laplacian pyramids which was used for Image Blending. Achieved smoother transitions in blended images, reducing visible seams by 80-90%, using multi-scale blending with Laplacian pyramids	fall 2024
Numerical Analysis of 1D Heat Equation using Finite Difference Schemes <i>MATH 829 - Numerical PDE</i> • Analyzed and implemented Crank-Nicolson, Foward Euler, and centered difference schems for 1D heat equation using finite difference methods, focusing on stability, consistency, and convergence. • Generated error plots and documented results in a detailed report.	fall 2024
One Algorithm Matching Problem <i>Conference: Math Problem in Industry</i> • Collaborated with a team to develop a robust, user-friendly algorithm aimed at maximizing effective matches between mentors and mentees. We achieved a 90% matching accuracy. • Developed new survey responses in Google Forms to accommodate all possible scenarios, enhancing the algorithm's robustness for future use	June 24, 2024 – June 29, 2024
Matrix Factorization Techniques for Recommendation Systems based on Bipartite Graph <i>CISC-489</i> • Applied collaborative filtering methods to address the challenges of bipartite graph structures. • Implemented matrix completion and stochastic gradient descent algorithms for efficient recommendation generation used in NETFLIX challenge.	fall 2023
Image Compression and De-blurring <i>MATH 612 NUMERICAL LINEAR ALGEBRA</i> • Executed image compression utilizing Singular Value Decomposition (SVD) and implemented effective de-blurring techniques using Tikhonov Regularization in MATLAB. Successfully reduced image file size by 78% without affecting the image quality.	fall 2023

CERTIFICATIONS

Supervised Machine Learning Regression and Classification <i>DeepLearning.AI</i> • Mastered machine learning fundamentals in Python using NumPy and scikit-learn. • Gained expertise in building and training supervised machine learning models for prediction and binary classification tasks.	
Python Mega Course: Build 20 Apps <i>Udemy</i> • Learning to build and deploy industry-ready Python applications from scratch, including web apps, recommendation systems, and desktop GUIs for real users.	Sept 09 - Current(expected completion: Nov 9)