J. Abigail Joseph

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EXPERIENCE

Digital Twin Simulation Environment Development for Smart Cities, REU Program in Sensing and Smart Systems (I-SENSE, Florida Atlantic University)

June 2023 - present

- Development of a virtual simulation environment and AI-enabled agent models to simulate real pedestrian behaviors and their integrations with their surroundings using Unity and C#
- Use data integration, modeling, and simulation techniques to ensure real-time data synchronization
- Produce and maintain extensive project and research documentation
- Version control to maintain software infrastructure via Git and GitHub

PROJECTS

Data Loading, Classification, and Visualization - 102 Flower *Mathematics of Data Science*

- Executed the visualization of the 102 Flower dataset by plotting images alongside their respective class labels, demonstrating proficiency in data representation and analysis
- Presented the outputs of a pre-trained AlexNet model on a dataset, showcasing the model's capabilities in image classification and deep learning application
- Fine-tuned the AlexNet neural network for enhanced image classification, achieving approximately 70% accuracy in distinguishing between various image categories

Tools used: Python (Pytorch), Google Colab

Exploratory Data Analysis - 'nycflights13' *Tools for Data Science*

- Conducted comprehensive exploratory data analysis on the 'nycflights13' dataset, employing statistical techniques to uncover trends and insights
- Developed a detailed analytical report summarizing findings and conclusions from the exploratory analysis of the dataset

Tools used: R (dplyr), RStudio

Florida Pine Rescue *Mathematics of Data Science*

- Utilized the AlexNet convolutional neural network architecture to distinguish casuarina trees from other species through advanced image recognition and classification
- Employed heatmap visualization techniques to represent and interpret geographic data, identifying regions in Florida with the highest Australian pine occurrence
- Conducted research to investigate the correlation between the prevalence of Australian pines and increased susceptibility to storm and hurricane damage, incorporating historical data analysis to validate observations
- Developed simulation techniques to observe the long-term impact of Australian pines on various ecological parameters, including beach erosion, bird nesting and migration patterns, and the decline of native flora and fauna populations
- Proposed a business-oriented solution for the Australian pine issue, recommending the sustainable conversion of the trees into piano manufacturing, aligning environmental management with economic value creation

Tools used: Python, Google CoLab
GITHUB: https://github.com/jabigailjoseph

SKILLS AND TECHNOLOGIES

Artificial Intelligence: Python, Google CoLab
Data: R, SQL, Excel
Game Development: C# for Unity
Programming: C/C++, Assembly
Web Development: CSS, HTML
Other: Git/GitHub

EDUCATION

Florida Atlantic University *May 2025*
Bachelor of Science in Data Science and Analytics in Engineering
Minor in ***Cybersecurity,*** *College of Engineering and Computer Science*
Academic Achievements: University Honors Program

RELEVANT COURSEWORK

Foundations of Computer Science**, Data Structures and Algorithms**, Discrete Mathematics, Introduction to Data Science, **Mathematics of Data Science**, **Introduction to Database Structures**, Artificial Intelligence for Social Good, Introduction to Microprocessors

LEADERSHIP EXPERIENCE

Society of Women Engineers*,* ***University Chapter Treasurer***

Spring 2023 - present

- Oversaw the organization's financial operations, applying mathematical knowledge skills for budgeting and fundraising, resulting in various successful events each semester
- Effectively coordinated student travel to the WE23 conference and liaised with the University and organization's faculty advisor for funding
- Helped expand the organization's membership from 20 to over 80 registered members, demonstrating effective outreach and collaborative engagement with other members of the organization's leadership board

ACTIVITIES

SIAM Reading Group, ***content enricher*** *Fall 2023 - present*

- Conducted in-depth research on various topics from assigned readings, enhancing group discussions and understanding through effective communication of findings
- Interdisciplinary collaboration in topics relating to Math, Biology, Computer Science, and Machine Learning

FOR MORE INFORMATION

- **Handshake:** https://fau.joinhandshake.com/stu/users/31336998
- **Personal Website:** https://jabigailjoseph.github.io/class_website/