

Joseph Spagnoli

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EDUCATION

University of Florida | Gainesville

Aug. 2023 – May 2027

Bachelor of Science in Computer Science, Minors: Electrical Engineering, Statistics

GPA: 4.0

Certificates in AI Fundamentals and Applications and Data Analytics

EXPERIENCE

Undergraduate Researcher

May 2025 – Present

Machine Learning and Sensing Lab (GatorSense) | University of Florida

- Selected to support the development of machine learning models for analyzing hyperspectral imagery in plant science applications, focusing on data preprocessing, dimensionality reduction, and classification tasks.
- Gaining experience with Python-based workflows for hyperspectral data, including spectral unmixing, feature extraction, and training ML pipelines for material identification and vegetation analysis.

AI Scholars Researcher

Oct. 2024 – Present

M.E. Rinker, Sr. School of Construction Management | University of Florida

- Developed a CTGAN synthesizer using SDV and Python, generating synthetic datasets with high fidelity to improve artificial neural network training accuracy.
- Investigated key physiological and environmental variables, such as cognitive function and core body temperature, to enhance predictive models for heat-related illnesses in construction workers.
- Contributed to the design of an ANN framework for real-time heat strain prediction, paving the way for IoT integration in wearable devices to improve workplace safety and reduce health risks.

First Year Florida Peer Leader

Dec. 2023 – Present

Division of Student Life | University of Florida

- Demonstrated leadership in collaboration with a faculty co-instructor to develop a comprehensive syllabus and 14 detailed lesson plans, ensuring alignment with course objectives and university standards.
- Utilized strong time management and planning skills to organize 20 assignments and activities, creating a structured and supportive learning environment for 25 new university students.

PROJECTS

EvoChess | Python

Mar. 2025 – Present

- Trained a CNN on over 80,000 chess games to predict the next best move from a given board state.
- Processed and transformed chess game data into structured matrices, enhancing both model training and move prediction accuracy.
- Integrated the model with an interactive chess board using Pygame and python-chess for real-time gameplay, with plans to incorporate a genetic algorithm to further refine its strategic nuances.

Six Degress of Twitter | C++ / Crow & React

Mar. 2025 – Apr. 2025

- Designed and implemented a C++ adjacency list and traversal system for BFS and A* algorithms to explore six degrees of separation in large-scale social network graphs.
- Built a Crow-based HTTP server exposing /path and /stats endpoints, returning JSON responses for graph metrics and pathfinding queries using a heuristic based on shared features.
- Collaborated on integration with a React/TypeScript frontend that visualizes connections and compares traversal methods through an interactive, force-directed graph interface.

Data-Driven Resource Optimization | Python

Jul. 2024 – Aug. 2024

- Developed custom gradient descent algorithm to minimize the errors squared cost function, ensuring effective optimization for predicting event resource needs.
- Visualized cost function progression using Matplotlib to validate proper optimization and assessed model performance by calculating MAE, MSE, and R^2 scores with Scikit-learn, ensuring reliable predictions through comprehensive evaluation metrics.
- Integrated model forecasts into event logistics, driving a 20% reduction in resource costs and an 85% decrease in waste by matching supply orders precisely to predicted attendance from presale data

SKILLS AND ACHIEVEMENTS

Languages: Python, C++, R, Java, SQL Tools: Git, PowerBI, Jupyter Labs, MySQL, VS Code, Visual Studio

Libraries/Frameworks: Pandas, NumPy, Matplotlib, Scikit-learn, XGBoost, PyTorch, SDV, React

Relevant Coursework: AI Fundamentals, Intro to Machine Learning, Data Structures and Algorithms, Programming with Data in R, Engineering Statistics, Differential Equations

Awards: AI Scholar (2025–2026), UF President's Honor Roll (2025–Present), Machen Florida Opportunity Scholar (2023)

Soft Skills: Communication, Collaboration, Problem-Solving, Critical Thinking, Adaptability, Time Management, Organization, Attention to Detail, Leadership & Mentoring, Conflict Resolution