Joseph Spagnoli

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Education

University of Florida | Gainesville **Aug. 2023 – May 2027**
Bachelor of Science in Computer Science, Minors: Statistics, Electrical Engineering **GPA: 4.0**
Certificates in AI Fundamentals and Applications and Data Analytics

Experience

System Administrator Intern **May 2025 – Present**
IFAS | University of Florida

- Managed technology needs for **25+ faculty**, providing technical support and leading system maintenance, imaging, and deployment to ensure seamless technology integration and reliability.
- Provided hands-on assistance with **Active Directory**, including user account management and basic group policy tasks.
- Delivered essential technical support by performing troubleshooting for common hardware and software issues to ensure operational uptime.

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** to generate high-fidelity synthetic data, creating the foundational dataset for initial artificial neural network training in the absence of real-world data.
- Investigated key physiological (5-8 features) and environmental (12-13 features) variables 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.

AI Intern **Jun. 2025 – Aug. 2025**
Humanworks Lab | NASA Johnson Space Center (JSC)

- Reduced manual anomaly detection time by **12 hours** by spearheading the development of an **autoencoder** using **PyTorch** to detect anomalies for ISS ARED machine sensor faults, processing over **11,000 data points** per exercise set in **large-scale time-series data**.
- Implemented a **CI/CD pipeline** with **PyTest** and GitLab runners to ensure code quality and deployed an **end-to-end data pipeline** with **Dagster**.
- Engineered a comprehensive dashboard using **Dash, Plotly, and SciPy**, improving data analysis efficiency by **15%** and enhancing readability with color-coded channels and metadata-on-hover functionality.

Projects

EvoChess | Python, PyTorch, MLflow, Dagster, AWS S3, Docker, Google Cloud Run **Mar. 2025 – Apr. 2025**

- Orchestrated an **automated MLOps pipeline** with **Dagster** to **ETL** chess game data from Lichess into an **AWS S3 bucket** for CNN model training with **PyTorch**, and deployed the final model as a containerized API using **Docker** and **Google Cloud Run**.
- Trained a **Convolutional Neural Network** in **PyTorch** on a filtered dataset of over **80,000 2000+ elo rated games**, engineering a data processing workflow to predict optimal move sequences from any given board state.
- Achieved a **1200 Elo rating**, resulting in a model capable of outperforming a beginner player.

Six Degress of Twitter | C++ / Crow & React **Mar. 2025 – Apr. 2025**

- Designed and implemented a C++ **adjacency list** and traversal system using **BFS** and **A*** algorithms to explore six degrees of separation in a large-scale social network graph of **100,000 nodes**.
- Built a Crow-based HTTP server to return JSON responses for graph metrics and pathfinding queries.
- Collaborated on integration with a React/TypeScript frontend that visualizes connections through an interactive, force-directed graph interface.

Data-Driven Resource Optimization | Python, Matplotlib, Scikit-learn **Jul. 2024 – Aug. 2024**

- Developed a custom gradient descent algorithm to minimize the errors squared cost function for predicting event resource needs.
- Visualized cost function progression using **Matplotlib** and validated model performance, achieving an **R^2 score** of **0.958** with **Scikit-learn**.
- Integrated model forecasts into event logistics, driving a **20%** reduction in resource costs and an **85%** decrease in waste.

Skills and Achievements

Languages: Python, C++, R, Java, SQL, JavaScript, TypeScript **Tools**: Jupyter Labs, PowerBI, MySQL, VS Code

Cloud & DevOps: AWS (S3), Google Cloud Platform (Cloud Run), Dagster, Docker, CI/CD, Git, Linux

Libraries/Frameworks: Scikit-learn, PyTorch, Pandas, NumPy, SciPy, Matplotlib, Seaborn, TensorFlow, SDV, React, Dash, Plotly, Statsmodels, Express.js, Node.js

Awards: Amentum Intern Scholarship (2025), AI Scholar (2025), UF President's Honor Roll (2024–Present), Machen Florida Opportunity Scholar (2023)