Joel McCandless | AI Engineer

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EDUCATION

Rensselaer Polytechnic Institute

M.S. in Computer Science '27; B.S. in Computer Engineering & Computer Science '26

4.0 GPA, Dean's Honor List, Rensselaer Leadership Award, RPI Featured: Engineering to Protect

Extracurriculars: RPI Men's Tennis, RPI Cybersecurity, Rensselaer Center for Open Source, SAAC

EXPERIENCE

Shubble | Creator & Project Lead   Jan 2025 - Present

- Created an open-source shuttle tracker for Yankee Trails and RPI used by **200 people per day**
- **Managed 16 students** across mobile, UI, testing, and data teams using Agile methodology
- Applied KNN, Random Forests, **Auto Regression (ARIMA)**, and RNNs to ETA prediction
- Utilized weighted bipartite matching with Mean Squared Error to match shuttles to schedules
- Built and maintained backend infrastructure by designing scalable database schemas and managing PostgreSQL using SQLAlchemy migrations

MITRE Corporation | GPS & Navigation Intern with AI Integration   May 2025 - Jul 2025

- Created an MCP interface using **Llama and Mistral** to control frequency and bandwidth of a software-defined radio; used as a foundational codebase for a team of 20 people internally
- **Improved testing speed by 3x** through applying computer networking principles to satellite communication systems, **implementing real-time data visualization** using matplotlib
- Demoed contributions to sponsors three times, iterating based on feedback

XP Health | Full-Stack Software Engineering Intern   May 2024 - Jul 2024

- Designed and implemented a barcode scanner framework to incorporate scanners into the daily operations workflow, **boosting inventory counting speed by 6X for 12 people**
- Reduced **API latency 100x** by leveraging Django QuerySet to optimize SQL calculations

PROJECTS & RESEARCH

AI Agent for Shuttle Alerts | Project Owner and Developer   Nov 2025 - Present

- Created continuous AI agent using Retrieval-Augmented Generation (**RAG**) to fetch data from RPI transportation, developer messages, and backend database to generate succinct updates
- Uses **LangChain** to augment Claude with **ReAct-driven** memory management and tool calls

Verifiable Neural Network Controllers | AI Researcher   Aug 2025 - Present

- Utilized Verisig to interpret Neural Networks as hybrid systems with guaranteed output ranges
- Implemented an adaptive control strategy ensuring reliability under system fault conditions

Project Able - HackRPI | Software Engineer   Nov 2024

- Won Best Accessibility Hack at hackathon, competing against 260 teams from 3 universities
- Leveraged AI (OpenAI's ChatGPT, Google Speech-to-Text) to build an **accessibility-focused navigation app** for visually impaired with voice interaction and user-recorded audio playback

MACHINE LEARNING & AI SKILLS

Skills: Regression, classification, deep neural networks, computer vision, linear algebra, probability

Languages & Tools: Python, C/C++, SQL, Numpy, OpenCV, Pandas, TensorFlow, Scikit, Git, Jira

- Developed and trained **CNNs and Fast R-CNNs** for image recognition and object detection; leveraged image preprocessing, feature extraction, and accuracy, precision, recall evaluation
- Applied vector spaces, eigenvalues/eigenvectors, orthogonality, least squares regression, and matrix decompositions (SVD, PCA) for **dimensionality reduction and optimization**
- Modeled random variables, conditional probability, expected value, variance, and covariance