Payton Schutte

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Education

University of Illinois at Urbana Champaign, Grainger College of Engineering   **May 2026**
Bachelor of Science in Computer Engineering

Skills

LangChain, PyTorch, Keras, Tensorflow, Python, C/C++, Java, FPGA, Linux, RISC-V, Git, GDB, Oscilloscope, Soldering, Circuit Design, System Verilog, Microsoft Suites

Work Experience

JamSystems   **Remote**
Software Engineering Intern   **June 2025 – Present**
- Engineered and benchmarked low-latency C++ data structures for high-frequency trading (HFT) systems, achieving 1.7×–3× speedups over standard library implementations.
- Optimizing performance-critical code paths for real-time data processing and minimal latency.
- Preparing retraining of an internal AI model on the C++ codebase to enhance automated code understanding and developer productivity.

NXP Semiconductors   **San Diego, CA**
Software Validation Intern   **May 2024 – August 2024**
- Served as a Software Validation Intern at NXP Semiconductors, focused on customer release testing NFC hardware and software solutions.
- Conducted over 100 stability tests across 6 different platforms on each customer release.
- Modified 30+ test cases to meet new pass requirements based on customer requests.
- Automated 30+ previously manual test cases using NXP's proprietary shell scripting language (JCShell), Python, the NXP test framework, and linear axis robots.

Relevant Courses

Applied Machine Learning, Applied Parallel Programming, Data Structures, Computer Systems Engineering, Principles of Safe Autonomy

Projects

Geospatial Image Classification with Deep Learning
Tools & Technologies: Python, PyTorch, Keras, CNNs, Vision Transformers, Transfer Learning, Satellite Imagery
- Developed and optimized deep learning models (CNNs and Vision Transformers) to classify satellite images of agricultural land.
- Implemented advanced data handling techniques along with image augmentation in Keras and PyTorch.
- Designed and trained CNNs in both PyTorch and Keras; fine-tuned pre-trained vision transformer models for comparative analysis.
- Applied transfer learning to enhance performance and reduce training time, achieving improved accuracy and F1-scores.
- Evaluated models using metrics such as accuracy, F1-score, and AU-ROC.

Siamese Neural Network
Tools & Technologies: Python, TensorFlow/Keras, NumPy, Matplotlib
- Reproduced and extended the architecture from *Siamese Neural Networks for One-Shot Image Recognition* (Koch, Zemel, & Salakhutdinov, ICML Deep Learning Workshop, 2015).
- Engineered a deep learning model to generate discriminative feature embeddings for image similarity tasks.
- Optimized training with contrastive loss on paired datasets, improving model accuracy in differentation.
- Evaluated performance with classification metrics and visualized embeddings, demonstrating real-world applications in identity verification.

QA Bot for Document-Based Question Answering
Tools & Technologies: LangChain, OpenAI GPT, Gradio, Vector DBs
- Developed an intelligent QA system capable of answering complex user queries based on loaded documents using LangChain and LLMs.
- Implemented a full RAG (Retrieval-Augmented Generation) pipeline: document loading, text splitting, embedding generation, and semantic retrieval using vector databases.
- Built a user-friendly front-end using Gradio to support real-time, interactive Q&A functionality.

Operating System Development
Tools & Technologies: RISC-V, Git, C
- Designed and implemented key OS components, including system calls, virtual memory management, trap handling, process forking, file system design, I/O device drivers, and an ELF loader.
- Created test architecture to accurately and effectively test each subsystem.

Certifications

IBM AI Engineering Professional Certificate — Coursera / IBM
- Completed a multi-course specialization covering deep learning, machine learning, and AI system design.
- Built and trained neural networks with PyTorch, TensorFlow, Keras, and scikit-learn, applying supervised and unsupervised learning techniques.