James W. Soole

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EDUCATION

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN
Master of Science in Computer Science **May 2024**
- 4.0 GPA, advisor David Forsyth, focus in Machine Learning and Computer Vision

Bachelor of Science in Computer Engineering with Highest Honors, Minor in Physics **2018-2022**
- 3.92 GPA, James Scholar Honors, TBP & HKN Honor Societies, A.R. Knight Award, Woythal Scholarship

EXPERIENCE

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN
Teaching Assistant — Artificial Intelligence (CS440), Deep Learning for CV (CS444) AUG 2022 – MAY 2024
- Write exams, Python assignments, and instruct on Neural Nets, CV, GANs, NLP, LLMs, RL, & PyTorch

MATHWORKS
Software Engineering Intern MAY-AUG 2023
- Built and deployed a conditional generative network for image-to-image translation in Matlab's Live Editor
- Spearheaded use of ML in Matlab's infrastructure, automating model import, build, and inference
- Developed a cGAN model in PyTorch to convert saved Matlab figures to the active desktop theme

Software Engineering Intern MAY-AUG 2022
- Created a file notification system for toolbox authors to use pluggable elements in Matlab's desktop
- Wrote public APIs in C++, JS, and Matlab to support instant update of toolbox metadata

Software Engineering Intern MAY-AUG 2021
- Developed an architecture customization tool for System Composer, a systems modeling program
- Responsible for design, full-stack development in C++ and JS, and unit & integration tests

RESEARCH & PROJECTS

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN
Computer Vision Thesis Research; Advisor David Forsyth JAN 2023 – MAY 2024
- Investigating generative and dense prediction models in PyTorch for lighting equivariance and editing
- StyLitGAN: Image-based Relighting via Latent Control (CVPR 2024)

Senior Thesis Imaging Research; Advisor Mark Anastasio SEPT 2021 – MAY 2022
- Developed a code framework for image reconstruction in medical imaging systems
- Simulated the photoacoustic effect, acoustic wave propagation, and ultrasound signal detection in Matlab

Pipelined Microprocessor JAN 2022 – MAY 2022
- Built a 5-stage pipelined microprocessor for RV32I ISA in System Verilog, for Computer Organization class
- Implemented prefetching, two-level caching, hazard detection, data forwarding, and branch prediction

Linux Operating System JAN 2021 – MAY 2021
- Created a Linux kernel from scratch in C and x86 Assembly, for Computer Systems class
- Implemented process scheduling, paging, file system, interrupts, exceptions, system calls, I/O, and PIT&RTC

RELEVANT COURSEWORK

Deep Learning, Computer Vision, AI Efficiency, Machine Learning, AI, Image Processing, Autonomous Vehicles
Parallel Programming, Computer Organization, Computer Systems, Distributed Systems, Cloud Computing, Databases

SKILLS

- **Languages**: C++, C, Python, JavaScript, Java, Matlab, SQL, Verilog, x86
- **Tools**: PyTorch, CUDA, Linux, AWS, ONNX, Spark, Redis, Docker, Kubernetes, MongoDB