William Alexander Knipe

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WORK EXPERIENCE

Software Developer Intern | **AWS** | Seattle, WA **May 2024 – Aug 2024**
- Developed a new API for AWS Organizations to enable efficient event history queries and integrated pagination for improved customer experience and engineering operations.
- Worked with microservices, NoSQL, message queues, serverless, and scalable cloud architectures.

Software Engineer Intern | **Software Engineering Institute** | Pittsburgh, PA **May 2022 – Dec 2022**
- Reimplemented and deployed organization-wide responsive emails using the MJML framework, resulting in enhanced maintainability and a 60% reduction in the amount of source code.
- Developed end-to-end tests in Cypress to enhance front-end accessibility and set up CI/CD to automatically provide performance and accessibility reports after each commit using Google Lighthouse.

Software Developer Intern | **Kognition** | Philadelphia, PA **Jun 2019 – Aug 2019**
- Investigated methods from the computer vision literature and prototyped models for object detection.
- Designed an algorithm to identify and track multiple people in real time using optical flow, allowing for 80% fewer calls to the company's facial recognition model.

EDUCATION

Carnegie Mellon University | Master of Software Engineering – Scalable Systems **Aug 2023 – Dec 2024**
- Program Focus: Scalable systems, including large-scale, intelligent systems
- GPA: 4.11/4.0

University of Pittsburgh | B.S. in Computer Science & B.S. in Mathematics **Aug 2020 – Apr 2023**
- GPA: 3.89/4.0

RELEVANT COURSEWORK

Mathematics
- Probability, Calculus I, II, & III, Statistics, Real Analysis, Linear Algebra, Game Theory, Abstract Algebra, Graph Theory, Differential Equations, Numerical Methods, Numerical Linear Algebra

Computer Science / Software Engineering
- Data Science, Machine Learning, Deep RL, Data Structures and Algorithms 1 & 2, Algorithm Design, Design Patterns, API Design, Quality Assurance, Distributed Systems, Software Architecture, DevOps

RESEARCH/PROJECTS

Subtask | https://subtask.cc/ **May 2024 – Jul 2024**
- Developed an application using NLP to break down tasks into subtasks, optimize scheduling for multiple workers, and display tasks dynamically on a Gantt Chart.
- Technical stack: React, FastAPI, DynamoDB, AWS Lambda, LLM, GitHub Actions, Docker, Pytest

Chatmosphere | https://github.com/WhimsicalWill/Chatmosphere **May 2023 – Jun 2023**
- Created a feature-rich web application leveraging AI to facilitate one-on-one human conversations around specific topics, offering unique features such as topical matching and AI chat capabilities.
- Technical stack: React, Flask, WebSocket, RESTful API, LLM, LangChain, embeddings, vector stores

Unsupervised Reinforcement Learning Research | Deepak Pathak's Research Group **Feb 2023 – May 2023**
- Contributed to the research and development of unsupervised reinforcement learning agents.
- Ported cutting-edge algorithms from TensorFlow to PyTorch and applied scalable unsupervised RL algorithms to Crafter and other open-ended complex environments.

Accessible RL | https://github.com/WhimsicalWill/AccessibleRL **May 2022 – Jun 2022**
- Implemented 8 fundamental Deep Reinforcement Learning algorithms in PyTorch and created detailed explanations and utilities for easily running experiments, plotting data, and saving models.

SERVICE

UMathIA Teaching Assistant **May 2019 – Jun 2019**
- Organized and taught lessons for UMathIA, a math camp for ~20 middle school students focusing on problem solving, coding, and high school math.

SKILLS

Python, Java, C, JavaScript, Rust | AI, ML, LLM | PyTorch, TensorFlow, JAX | Agile | Linux | Git | Cloud | CI/CD