Sam Ruggerio

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Experience

Software Development Engineering Intern May 2022 – August 2022
Amazon – AWS *Seattle, WA*
- Designed & developed a platform in **React/TypeScript** to streamline in legal entity deployment
- Helped reduce deployment time of legal entities towards goal of 91%
- Implemented an interactive map to visualize legal entity coverage worldwide

Algorithms Course Developer January 2022 – May 2023
University of Illinois Urbana-Champaign *Champaign, IL*
- Designed, implemented, and deployed autograded questions using **Docker/Git** to assess theoretical CS skills
- Built an auto-grader to assess FSM creation using **TypeScript/HTML/CSS**
- Received positive feedback (over 80%) from students about the impact of autograded content for the course

Graduate Algorithms Course Assistant January 2023 - May 2023
University of Illinois Urbana-Champaign *Champaign, IL*
- Facilitated office hours for 110 students on randomized, max-flow, and dynamic programming algorithms
- Designed rubrics and graded weekly written assessments

Engineering Intern January 2021 – July 2021
Ergoseal Inc. *Carol Stream, IL*
- Assisted the engineering department with workflow improvement projects and corresponding feasibility reviews
- Worked on automating revision control for part files between imports of SOLIDWORKS PDM and GSS
- Built scripts to aggregate key company success metrics, reducing backlog work by two weeks per year

Education

University of Illinois Urbana-Champaign Champaign, IL
PhD in Computer Science, Algorithmic Foundations of Optimization *Aug. 2023 - Present*

University of Illinois Urbana-Champaign Champaign, IL
BS. Computer Science Engineering with Highest Honors – GPA: 3.96 *Aug. 2020 – May 2023*
- Specializations: Algorithms, Security, Systems Programming, Computational Geometry, Graphics

Research

Auto-Graded Scaffolding Exercises For Theoretical Computer Science by Erickson et al. 2023
- A summary paper of our work in Algorithms course development and how it impacted student's learning
- Accepted to the **ASEE 2023** Annual Conference and Exposition on the Computer Science Education track

Undergraduate Thesis on Parallel Generation of Physically Accurate Lightning May 2023
- Exploration into acceleration techniques for physically accurate lightning effects
- Used **CUDA** and parallel diffusion limited aggregation algorithms to apply to lightning scenarios

Solving the Isoperimetric Curve Problem August 2022 – Present
- Ongoing research with Sariel Har-Peled on optimal cutting and separation of surfaces over tight regions
- Using shortest-path algorithms to locate isoperimetric curves and other natural features

Optimizing a Deterministic Measure of Counterdeception via Reattachment August 2022 – Present
- Designing graph algorithms for constructing road networks to fool adversaries

Technical Skills & Leadership

Languages: C, C++, NVIDIA CUDA, Python, Java, TypeScript
Skills & Libraries: NumPy, PyTorch, Tensorflow, React, Node.js, Gatsby
SIGPwny: Cybersecurity Club and Competitive Team; Designed lessons and challenges, competed in CTFs and designed integrated electronic badges for our local Fall CTF
SIGma: Founder of Math and Algorithms Club; Gave talks on various CS theory topics to students