Sowmith Kunapaneni

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Education

University of Alabama at Birmingham — Birmingham, AL
MSc in Computer Science — *Jan 2023 – Present*

Velagapudi Ramakrishna Siddhartha Engineering College — Vijayawada, India
Bachelor's in Electronics and Communication Engineering — *Aug 2016 – Sept 2020*

Experience

Graduate Research Assistant — Aug 2023 – Present
HARP Lab, University of Alabama at Birmingham — *Birmingham, AL*

- Working under Dr.Thomas Gilray as a research assistant for Programming Languages and HPC research.
- Learning about Control Flow Analysis, Functional Data Structures and Deductive Databases.
- Contributed to Brouhaha Compiler, working on Slog Lang; A deductive database engine

Systems Engineer — Oct 2020 – Dec 2022
Tata Consultancy Services — *Hyderabad, India*

- Built internal CLI tooling to improve support workflow and automate tasks.
- Implemented log management and monitoring tools, reducing failure rates and improving SLA times.
- Developed comprehensive dashboards for tracking and monitoring job health, leveraging logs and various job-specific parameters.

Projects

Brouhaha's Compiler & Run-Time | *C++, Racket, CMake* — June 2023 – Present

- A full program analyzing compiler for sub-set of Racket
- Wrote the C++ Run-Time to support primitives and data structures
- Integrated Boehm Garbage Collector and GNU MP Big Num Lib into the Run-Time
- Worked on a Hash Array Mapped Trie implementation to support 'hash' and 'set' prims
- Wrote a tree-based index over a hash table to enable efficient query of analysis results by the compiler
- https://github.com/harp-lab/brouhaha

Multi Threaded Maze Game Server | *C++, Python* — Aug 2023 – Dec 2023

- Renders frames of a 2D Maze-game simulation, communicating with an agent over stdin/out
- Implemented Radial Sweep for agent vision, multi-agent support, and game object interactions.
- Wrote reference agents that use A*, D*Lite and Flood Fill algorithms.
- https://github.com/harp-lab/maze-game

Slog Lang | A Parallel Datalog Engine | *C++, CMake, Racket, Clang* — Mar 2024 – Present

- Setup build and testing for the daemon.
- Working on Run-Time; Tagging scheme, Primitives, Indexing.

Technical Skills

Programming Languages: C++, C, Python, CUDA, Racket, Go, Datalog, HTML & CSS
Developer Tools: Git, Docker, Clang, Linux, Core Utils, LSPs, Vim, CLion