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Herbie Rand

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Education

Carnegie Mellon University — Mountain View, CA
Master of Science in Software Engineering; GPA: 4.00 — *May 2023—Dec 2024*

Swarthmore College — Swarthmore, PA
Bachelor of Arts in Computer Science, Philosophy; GPA: 3.70 — *Sep 2017—May 2021*

Experience

Lutron Electronics — Philadelphia, PA
Senior Software Engineer — *Mar 2023—Jun 2023*
Software Engineer — *Aug 2021—Mar 2023*

- Developed and maintained a Go server application responsible for handling user requests and controlling system lighting via REST API
- Implemented Go service enabling users to visually identify certain Lutron devices during setup of large-scale lighting systems, streamlining installation of Lutron products
- Refactored Go package implementing Homekit Accessory Protocol to improve testability; wrote unit tests to increase test coverage from 20 to 80 percent
- Coauthored Python integration testing framework to automate integration tests for HomeWorks QSX firmware; tests detected 3 defects within one month of deployment
- Automated test-database upgrades by writing Bash scripts and integrating them with our Jenkins CI/CD Pipeline to eliminate manual database upgrades from the software development lifecycle

Swarthmore College — Swarthmore, PA
Undergraduate Research Fellow — *May 2020—Aug 2020*

- Collaborated with two professors and one peer to build model RDBMS in C++ (SwatDB)
- Implemented Buffer Manager with clock-replacement policy to minimize page-evictions; enabled safe concurrent memory access by protecting page-lookup table with mutexes
- Developed thread-safe Disk Manager layer; stress tested Disk Manager and Buffer Manager implementations using Posix threads
- Integrated SwatDB with *Introduction to Database Systems* at Swarthmore College; mentored students and worked as grader

Swarthmore College — Swarthmore, PA
Student Systems Administrator — *May 2019—May 2021*

- Constructed Python Library to generate Grafana dashboards using Zabbix monitoring statistics; generated dashboards displaying CPU load, memory usage, and system uptime of 150 lab machines for faculty use
- Automated software installations and updates on Debian lab computers using Bash and Ansible
- Provided instruction to Swarthmore students on interacting with the UNIX shell for navigating the filesystem

Projects

Dynamic Memory Allocator | Carnegie Mellon University — *C*

- Developed custom implementation of dynamic memory allocation functions in C, including malloc, calloc, and free; optimized allocator using a combination of simple-segregated-storage and segregated-fits to acheive over 75 percent heap utilization

McSweeney | github.com/hrand1005/mcsweeney — *Go, Bash, SQLite*

- Created a CLI app to automate video compilation and uploading to YouTube using Twitch and Google APIs; leveraged FFmpeg for seamless video and audio synchronization and Go's concurrency mechanisms to parallelize video encodings for improved performance

Training Notebook | github.com/hrand1005/training-notebook — *Go, Python, Bash, MongoDB*

- Built HTTP REST API server for a training notebook app, applying multiple web frameworks, databases, and tools; gained experience with Gin, Gorilla/Mux, SQLite, MongoDB, Go Validator, and Go JWT; developed expertise in REST-API development and technology selection

Technical Skills

Programming Languages:	Go, Python, C, C++, C#, JavaScript, SQL, Bash
Libraries & Databases:	Gin, Gorilla/Mux, Flask, Behave, Express, SQLite, PostgreSQL, MongoDB
CI Tools & Platforms:	Jenkins, Github Actions, Docker, Kubernetes, JFrog Artifactory