Timothy Southwick

157 Crestview Lane
Fitchburg, MA
978-857-7943

Timothy.Southwick94@gmail.com
github.com/NickNackGus/Portfolio
www.linkedin.com/in/timothy-southwick
github.com/TeamMonumenta/

EDUCATION

University of Massachusetts Lowell, Lowell, MA
Master of Engineering in Computer Engineering GPA: 3.5/4.0
Bachelor of Engineering in Computer Engineering GPA: 3.1/4.0

RELEVANT SKILLS

Languages: Java, C/C++, Rust, Python 3, Python 2, Verilog, JSON, Lua, BASH, BASIC, Assembly

Software: Artificial Intelligence, Linux, Git, SSH, Gradle, Maven, Redis, RabbitMQ, Kubernetes, Docker, screen, tmux, ALSA

Hardware: FPGA, I2C, PIC Microcontrollers, Raspberry Pi, Arduino, Lego robotics (using C)

EXPERIENCE

Lead Developer for Monumenta Games LLC, Remote (2017-Present)

- Working independently and collaboratively with a global team of over 50 people.
- Helping deploy and maintain a network of 70+ Kubernetes Docker deployments on several domains across multiple dedicated servers, with RabbitMQ for messages and Redis for long-term player data.
- Spearheading cross-server Java plugins, including:
  - Chat plugin with configuration saved as JSON in Redis and messages via RabbitMQ.
  - Timing-sensitive scoring system providing eventual consistency.
- Charting Python/Rust automation programs for weekly updates and maintenance.
- Implemented custom parser of JSON-like data for use in a data editing tool.
- Devised a space partitioning data structure based on k-d trees to identify which zone, if any, a point in 3D space occupies in O(log(n)) time.
- Modified obfuscated and decompiled Java server code in compliance with the relevant licenses.

Firmware Engineer for Doble Engineering, Watertown, MA (July 2019-July 2021)

- Developed high level firmware for signal generation, data acquisition, and signal analysis for use in power transmission and protection equipment testing.
- Made use of the Scrum agile collaboration framework
- Improved file transfer, debugging DHCP network issue.
- Automated collection and processing of error code logs for quarterly reports.
- Devised and implemented method to process large amounts of data in the background using a small amount of memory.
- Firmware in C++ via gcc, debugging with gdb, testing with Python, and committed through Git.

Personal Projects

Full-time Linux user (2009-Present)

- Home desktop doubles as SSH/SFTP file server with public key authentication.
- Administrative tasks such as installing and maintaining server software (boot loader, sshd, MySQL, JDK, Kubernetes).
- Created automated installation scripts to install programs from the package manager and sharing personal files between multiple operating systems with separate program configurations.

Firmware programmer (2005-Present)

- Built and programmed robots using C-like languages, including a mix of analog and digital sensors and PWM/PID motor control, including a rotating camera mount timed to take a panorama over the course of 24 hours and stitch together the resulting pictures.
- Used an Arduino to automate climate control at home using smart outlets.
- Wrote initialization and driver code for various hardware projects using available datasheets.
- Studied the original USB type C specifications.

Application level programmer (2009-Present)

- Automated phone routines using BASIC, such as using my calendar to silence it and run alarms.
- Scripted the archival of old pictures by year and month at full quality.
- Extensive use of the AI course from UC Berkeley for problem solving.
- Wrote 150+ programs for daily use and amusement in BASH, Python, Lua, C, and assembly.

Capstone Project (2016)

- Created drivers for audio hardware
- Audio Processor for Mobile Audio Editing and Recording.
- Used the BeagleBone Black, Debian, C, I^2C, ALSA, and ssh to record, edit, and play audio.

SystemVerilog (2016-2018)

- Developed a SIMD implementation of Connect Four with VGA-like support.
- Performed verification exercises on sample code.