JOSEPH BERMAN

WORK EXPERIENCE

Mujin Inc.

Backend Robotics Engineer Intern // Koto, Tokyo, Japan // August – December 2022

- Formulated, developed, and assessed code to load robot simulation remotely over HTTP and FTP into OpenRAVE in C++
- Optimized memory and synchronization between robots
- Utilized socket programming for communication between cameras and robot controllers
- Wrote Python scripts for robot navigation and logic
- Collaborated with frontend to construct a user interface
- Translated computer vision drivers from Python to C++ for Canon RV1100
- Verified software with simulation and real-world testing
- Demoed automated guided vehicle for Toyota at Logis-Tech Tokyo 2022

Amazon Robotics

Robotics Hardware Co-Op // Westborough, MA // September 2021 – December 2021

- Overhauled drivers for new and existing robots in C++
- Developed path planning for FANUC arm robots
- Formulated Tech Pendant scripts for FANUC testing patterns
- Integrated Programmable Logic Controllers into robot routines
- Flashed and verified firmware for initial deployment
- Collaborated across business units, incorporated feedback, and operated robotics with network sockets and Linux environment

Northeastern University Informational Technology Services

Pro Customer Experience Technician // Boston, MA // July 2020 – July 2021

- Telephonic technical support for university technologies
- Solved 485 software tickets with a 4.88/5 rating

PROJECTS

FPGA Ring Oscillator PUF

Boston, MA // February 2025 – March 2025

- Implemented a Ring Oscillator Physical Unclonable Function in Verilog
- Creates controlled randomness seeded in minute differences in silicon fabrication
- Simulated and tested on ZYNQ-7000 FPGA
- Future steps to create AES Encryption between PS and PL side of a ZYNQ

SenchaCam

Boston, MA // May 2023 – August 2023

- Engineered a camera mesh network for remote viewing of house cats
- Utilized HPE ProLiant DL 360P for webhosting
- Deployed ESP32-Cam for camera nodes
- Constructed affordable and expandable solution for real time monitoring
- Communicated over Cloudflare Zero Trust Tunnel for security

CookAware

Northeastern University // May 2022 – May 2023

- Smart Kitchen for fire detection and prevention
- Designed an embedded Internet of Things network
- Multithreaded microcontroller for reliable real time data
- Fair data collection scheduling between environment sensors
- Programmed in C and tested on a RP2040
- Integrated iPhone application for user interface

Robotics and Intelligent Vehicles Research Laboratory

Northeastern University // January 2022 – June 2022

- Implemented python ROS drivers for Nanotec C5-E motor controllers
- Hanson, N., Kelestemur, T., Berman, J., Ritzenhoff, D., & Padir, T. (2022, September). Hyperbot-A Benchmarking Testbed For Acquisition Of Robot-Centric Hyperspectral Scene And In-Hand Object Data

Bomba Security System

Northeastern University // January 2022 – May 2022

- Designed image rendering APIs for security camera network
- User space level implementation to communicate with video cards
- Utilized Linux Direct Rendering Manager
- Interfaced over HDMI
- Programmed in C and tested on ZYNQ-7000 development boards

INFO

By Request

joseph@jberman.dev

Somerville, MA

EDUCATION

Northeastern University
Boston, MA

M.S. Computer Engineering
Concentration in Computer Systems and Software
August 2024

B.S. Computer Engineering
December 2023

Beta Gamma Epsilon Engineering Fraternity

SKILLS

Programming Languages

C
C++
Python
MicroPython
Verilog

Software Tools

Xilinx Vivado
ROS
Git
Docker
GDB

Devices

ZYNQ-7000
RP2040
ATmega
ESP32
RISC-V
Cyclone V DE1

Operating Systems

RTOS
Bare-metal
Debian
macOS
Windows

Amateur Radio
General Class License