LIAM CHALK

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PROFESSIONAL SUMMARY

Computer Engineer and Software Engineer

Experienced in hardware design and software engineering for high frequency and reliability using VHDL, SystemVerilog, Python, C++, and TCL.

EDUCATION

Harvey Mudd College Computer Engineering Major 2019 - 2023

Relevant Coursework: System on Chip Design, Digital Electronics, Computer Engineering, Electronic Circuits, Analog Electronics, Systems Engineering, Operations Research, State Estimation, Rocketry, Computer Vision, Continuum Mechanics, Materials Engineering, Experimental Engineering, Manufacturing Engineering

TECHNICAL EXPERIENCE

Digital Design Engineer at TrellisWare Technologies August 2023 - Present

- Designing FPGA functionality for tactical radio RF signal processing for specialized waveforms
- Writing VHDL and running simulations in ModelSim and Vivado

FPGA Engineering Intern at FTS International Summer 2022

- Designed FPGA system for high frequency software defined radio signal processing for use on satellites
- Developed filtering and analysis in SystemVerilog and integrated within Python pre and post processing

Software Engineer at Silvus Technologies August 2022 - June 2023

- Created a neural network to localize radio frequency signal origin and environment mapping using GPS, IMU, LiDAR, compass, and altimeter drone data collection
- Led a team of five students using Pytorch to train the model and test performance

Software Engineer at Bobcat Fall 2021

- Designed a novel C++ simultaneous localization and mapping algorithm for autonomous driving
- Patent: "Path Planning for Automatic Mowers" (WO 205244)
- Autonomously covered the mowing area for a lawnmower using state estimation and path optimization

PROJECTS

Core-V Wally Contributor Spring 2023

- Developed C and assembly language coverage tests for a SystemVerilog RISC-V 5-stage pipelined processor
- Contributed to open source tests for PMPCFG and PMPADDR coverage for Privilege, IFU, and LSU units

Backtesting for Trading Strategies Platform Spring 2024

- Created a platform for users to test Python and C++ algorithmic trading strategies against historical data
- Hosted on AWS with Django fullstack and Python backend

Computer Vision Object Reconstruction Spring 2023

- Created 3D reconstructed models in Python using object masking, SIFT keypoint detection, and point clouds

Coronavirus Mutation Tracking Spring 2021

- Identified mutations in coronavirus DNA and constructed a evolution tree over time using Python

SKILLS

FPGA Design	VHDL, SystemVerilog, UVM, Xilinx Vivado, ModelSim, Zynq APSoC, ARM, and RISC-V
Programming	C, C++, Python, TCL, Java, HTML, Git, PyTorch, OpenCV, Django, React, AWS
FPGA Filters	Particle Filter, Extended Kalman Filter, Autocorrelation Filter, Moving Average Filter
Software	MATLAB, SolidWorks CAD, Autodesk CAD, AMPL, COMSOL, Simulink, Segger
Hardware	Digital Circuitry, Arduino, Radar, GPS, IMU, Magnetometer, Controller Area Network