LIAM CHALK

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PROFESSIONAL SUMMARY

FPGA Designer and Electrical Engineer
Experienced in FPGA system design and testing, optimizing for high frequency and reliability

EDUCATION

Harvey Mudd College Electrical 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

TrellisWare Technologies FPGA Engineer August 2023 - Present
Designing FPGA functionality for tactical radio RF signal processing for specialized waveforms
Team of fourteen engineers designing in VHDL and running simulations in ModelSim and Vivado

FTS International FPGA Engineer Summer 2022
FPGA design for high frequency software defined radio signal processing for use on satellites
Developed filtering and analysis techniques in Verilog and integrated within Python pre and post processing

Silvus Technologies Neural Network Clinic Fall - Spring 2023
Neural network localization of radio frequency signal origin and environment mapping using GPS, IMU, LiDAR, compass, and altimeter UAV drone data collection
Team lead for a group of five students coding in Python to train the model and verify with data collection

Doosan Bobcat Autonomous Vehicle Clinic 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, Xilinx Vivado, ModelSim, Zynq APSoC, ARM, and RISC-V
Programming	Python, C, C++, Java, HTML, Git, PyTorch, OpenCV, Django, React, TCL, 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