LIAM CHALK

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PROFESSIONAL SUMMARY

Software Engineer and FPGA Engineer
Experienced in software system design, web development, and digital design to solve challenging problems

EDUCATION

Harvey Mudd College Computer Engineering Major 2019 - 2023
Relevant Coursework: Data Structures, Computer Vision, Discrete Math, Computer Engineering, State Estimation, System on Chip Design, Digital Electronics, Analog Electronics, Systems Engineering

TECHNICAL EXPERIENCE

TrellisWare Technologies Digital Design Engineer August 2023 - Present
- Designing FPGA functionality for tactical radio RF signal processing for specialized waveforms
- Writing VHDL and running simulations in ModelSim and Vivado

Silvus Technologies Neural Network Clinic Software Engineer Fall - Spring 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

Doosan Bobcat Autonomous Vehicle Clinic Software Engineer Fall 2021
- Designed a novel simultaneous localization and mapping algorithm for new autonomous driving technology
- Patent: "Path Planning for Automatic Mowers" (WO 205244)
- Wrote C++ software for Simultaneous Localization and Mapping with a team of six students
- Autonomously covered the mowing area for a lawnmower using state estimation and path optimization

PROJECTS

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

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

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

Connect Four Robot Fall 2020
- Built a CPU player in Python to analyze board position, score all possible moves, and play optimally

SKILLS

Programming	Python, C, C++, Java, HTML, Git, PyTorch, OpenCV, Django, React, TCL, AWS
FPGA Design	VHDL, SystemVerilog, Xilinx Vivado, ModelSim, Zynq APSoC, ARM, and RISC-V
State Estimation	Particle Filter, Extended Kalman Filter, Bayes Filter, Lagrangian Dynamics
Path Planning	A*, D*, PID Control, Cellular Decomposition, Traveling Salesman Problem