LIAM CHALK

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PROFESSIONAL SUMMARY

FPGA Designer and Electrical Engineer
Experienced in FPGA system signal processing filter design and optimization 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

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, AMPL, TCL
FPGA Filters	Particle Filter, Extended Kalman Filter, Autocorrelation Filter, Moving Average Filter
Software	MATLAB, SolidWorks CAD, Autodesk CAD, AMPL, COMSOL, Simulink, Segger
Path Planning	A*, D*, PID Control, Cellular Decomposition, Traveling Salesman Problem
Hardware	Radar, GPS, IMU, Magnetometer, Arduino, Controller Area Network, Digital Circuitry

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
Autonomous mowing area coverage for a ZT6100 lawnmower using state estimation and path optimization
Team of six students equipped hardware and wrote software for Simultaneous Localization and Mapping
Patented "Path Planning for Automatic Mowers" (WO 205244) for new autonomous driving technology

WePackItAll Manufacturing Engineering Consultant Summer 2021
Streamlining of a supplement packaging line using lean manufacturing principles and single-piece flow
Won first place in the regional IISE paper competition and third in the national competition
$1.2 million in estimated annual savings from reduced labor costs and inventory

Laguna Clay Manufacturing Engineering Consultant Summer 2021
Complete redesign of a ceramics manufacturing facility floorplan using value stream mapping and gemba kaizen
$740,000 in estimated annual savings from reduced floorspace and forktruck usage

EXTRACURRICULARS

Leadership	Honor Board chair, Case dorm president, Asian affinity group president
Extracurriculars	Machine shop proctor, rocketry club, The Student Life news writer, club rugby
Awards	Davies Prize for Outstanding Engineering Design, Riggs Fellowship, National Merit Scholar, Presidential Scholar Finalist, Seymour R. Bolten Fellowship