Ihsan Salari

+1 (236)-996-7441 hi@ihsan.cc https://ihsan.cc /in/ihsan-sa ihsan-sa

Education

BASc Electrical Engineering *University of Waterloo* *Grade: 89%* **Waterloo, ON** *present*

Qualifications

- **eCAD:** Cadence Orcad/Capture/Allegro, LTspice, Altium, KiCAD, HFSS, HyperLynx, COMSOL
- **Lab:** Oscilloscope, VNA, TDR, Bode plot, SMD rework, function generator, electronic load, DMM
- **Programming:** C, C++, Python, Rust, Git, LaTeX, MATLAB, SPICE, ROS 2, NVIDIA CUDA
- **Tools:** STM32, PIC18, AMD/Xilinx, Intel/Altera, Jira, Confluence, Slack
- **FPGA:** AMD/Xilinx Vivado & Vitis - Verilog & VHDL - Zynq SoC
- **Languages/Interests:** French/German/English (all native), Spanish (beginner), skiing, mountain biking, ethics

Experience

Signal Integrity Engineering *Arista Networks, Inc.* **Santa Clara, CA** *09/2025-present*

- Simulated and optimized **200G PAM4 SerDes** and **PCIe Gen 5** differential pairs using Hyperlynx, HFSS, ADS, and Sigrity.
- Investigated insertion/return losses and TDRs to perform root cause analysis of SI concerns and make PCB layout modifications.
- Tuned vias and ASIC/connector breakouts to meet loss budgets through iterative deduction, 3D modelling and simulation.
- Provided detailed signal integrity reports and collaborated with HW engineers to **develop layout of 102.4T switches**.
- Performed PCB material characterization and system debug at up to 70GHz using ultra high-end **VNAs**, **TDRs**, and **oscilloscopes**.
- Used **Cadence** tools to work on and review schematics and layouts and provide hardware design recommendations.
- Prototyped and implemented setups to test viability of future designs, validate current PCBs and perform case-by-case debug.

Power Electronics Designer *aiRadar, Inc.* **Vancouver, BC** *01/2025 - 05/2025*

- Spearheaded end-to-end redesign of **3.5MHz GaN**, wide input/output multi-stage dc-to-dc converter for advanced multi-beam sonar, including research, topology selection, simulation, firmware development and testing.
- Implemented robust **STM32** firmware with voltage-fed **PID control**, live telemetry, and extensive **UART** command interface.
- Designed and built breadboard prototypes using GaN FET eval kits and STM32 dev boards for initial testing and PID tuning.
- Proposed and validated converter topologies using **LTspice** simulations that accounted for parasitics at MHz frequencies.
- Authored extensive technical documentation in **LaTeX** detailing power electronics theory, designs tradeoffs, simulation, custom mathematical models, component selection, and embedded firmware architecture.
- Developed and executed board bring-up and test plan; rapidly iterated on testing methodology based on real-time results.
- Collaborated with a fast-paced engineering team and provided regular updates on design, timeline and executive decisions.

Technical Projects

USB-C Trigger Board *11/2024 - present*

- End-to-end design of **140W USB-C Power Delivery (PD)** trigger board with Extended Power Range (EPR) serial interface.
- Implemented solution based on USB-C PD IC with I2C configuration via onboard STM32 hosting custom negotiation firmware.
- Designed **6-layer PCB** optimizing return paths, power trace dimensions and thermals, and subsequently reflowed prototypes.

Electrohydrodynamic (Ionic) Propulsion *09/2022 - 10/2023*

- Designed and constructed functioning **50kV 100W** high voltage (HV) flyback power converter with Cockcroft-Walton voltage multiplier simulated in **LTspice**.
- Designed and built working electrohydrodynamic (ionic) thruster that achieved wind speeds of $1.5ms^{-1}$ and thrust of $40mN$.
- Inspired by **MIT research**, authored paper in which the optimal electrode pair spacing in single-stage thrusters consisting of two electrode pairs in parallel operation was derived and confirmed in a custom experiment.

3000 lumen LED floodlights *11/2024 - present*

- End-to-end design of **25W 3000 lumen** LED floodlights with brightness control and custom light programming via serial interface.
- Leveraged low-cost thermal management using **via-stitching**, exposed planes for heatsink, and thermal planes on 2-layer PCB.
- Implemented power LED driver circuit using specialized IC with PWM control via oboard STM32 with custom light modes.