Adrian Darlington

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adrian-darlington.com | linkedin.com/in/a-darlington | U.S. Citizen

Education

Columbia University *Expected Graduation: May 2028*
Bachelor of Science in Electrical Engineering | C.P. Davis Scholar

Engineering Experience

Avangrid *June 2026 – Present*
Distribution Planning Assistant (part-time) *August 2026 – Present*
Distribution Planning Intern *June – August 2026*

- Analyzed capacity and reliability for **4 substations serving 20,000+ customers**; helped develop **12 upgrade alternatives** supporting **$30M+** in investment analysis, all advancing to further engineering study.
- Built a harmonic-regression workflow that reduced personal **SCADA data-cleaning time by approximately 30%** and reconstructed demand by unmasking distributed generation from load data.
- Retained part-time based on performance; presented recommendations to engineering and investment-review groups.

ShredElectric *June – August 2025*
Microgrid Development Intern

- Integrated a **48 V, 300 Ah electric catamaran power system** with approximately **3 kW propulsion**, VESC motor control, battery charging, protection, emergency stop, and **400 W MPPT solar charging**.
- Independently restored a customer telemetry/dashboard system in approximately **3 hours** and performed field electrical repairs on marine equipment.

Ocean Renewable Power Company *June – August 2023*
Electrical Engineering Intern

- Contributed to a Python statistical model of tides and tidal-energy production; designed schematics for a PLC-based hardware-in-the-loop system representing a **14 kW RivGen generator**.

Engineering Projects

RADIOLAND
Wideband Software-Defined Radio Receiver

- Independently designed and built a **10 cm × 10 cm, four-layer RF receiver PCB** with a **600 MHz–6 GHz** tuning range.
- Designed the RF/mixed-signal chain with input protection, LNA, I/Q demodulator, PLL/VCO local oscillator, anti-alias filtering, and a **dual-channel 12-bit, 250 MSPS ADC** for an Artix-7 FPGA interface.
- Routed controlled-impedance RF traces, differential analog paths, time-delay-matched LVDS, high-frequency clocks, and RGMII/Gigabit Ethernet; designed the multi-rail power tree and sequencing.
- Coordinated PCB fabrication and assembly, documented impedance requirements, evaluated component substitutions, reviewed CAM changes, and resolved clearance issues before production.
- Brought up and validated the receiver, confirming its tuning range, PLL lock, ADC sample rate, and RF input match through S-parameter measurements; implemented a **GNU Radio-compatible UDP interface** with hardware filtering and decimation and demonstrated ADS-B demodulation.

Plant Sensor
Mixed-Signal Sensing & Embedded Telemetry

- Designed a custom nRF52840 PCB with **125 kHz capacitive soil-moisture sensing**, **5 kHz bipolar conductance measurement**, and temperature, humidity, and light sensors.
- Built sensor firmware and BLE communication to an ESP32 gateway with dual OLED displays and HTTPS telemetry, connecting custom hardware to a live monitoring website.

FPGA Music Sequencer
VHDL

- Implemented and demonstrated a **65-event melody sequencer** with programmable clock dividers and a seven-segment display; verified note selection and tone timing with a VHDL testbench.

Skills

PCB Design: Altium Designer, KiCad, schematic capture, power tree, RF/mixed-signal PCB layout, controlled impedance, DFM, DFT
Lab skills: Vector Network Analyzer, Spectrum Analyzer, Oscilloscope, SMD soldering, PCB rework
FPGA & Embedded: Verilog, VHDL, C/C++, AMD Vivado, Artix-7, timing analysis, ICEPI Zero, nRF52840, ESP32, STM32, RP2040, SPI, I2C, UART, BLE, RGMII/Ethernet, UDP streaming, PCIe, USB, JTAG
Software and Simulation: Python, GNU Radio, MATLAB/Simulink, Keysight ADS, Ansys HFSS, Microsoft Office, Onshape, FreeCAD