

Graham Medlin - Prototype Engineer

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Senior R&D Engineer	Formlabs (2021-2023) Integration of process control and stepper motion features through full-stack: hardware, embedded C on MCU, embedded Linux, and C++ software <ul style="list-style-type: none">– Design of thermal control of next-generation printer– SLA 3D-printing process tuning and Python automated testing– Debugging process control, SPI and I2C communication, and sensors via SWD, logic analyzer, and oscilloscope– Modification and repair of existing and prototype printer farm	
Senior R&D Engineer	ABB (2017-2021) Industrial research, development, and prototyping of electric motors, industrial IoT, and power electronics <ul style="list-style-type: none">– Packaging and thermal design of integrated motor-drive– Thermal design high-density power electronics– Magnetic field position encoder with FPGA to emulate SSI/ABZ– Energy harvesting for wireless IoT sensor	
R&D Engineer		<ul style="list-style-type: none">– Prototyping and testing of electric motors, drives, and sensor PCBs
Intern		Development of laboratory testing facilities and prototyping capabilities <ul style="list-style-type: none">– Measurement: power, torque, scope, logic analyzer, material properties– Prototyping: additive, CAM and CNC milling, water jet, laser cutting– Nuts and bolts and hand tools
Education	NCSU - Ph.D., Experimental Particle Physics (2017) <i>Characterization of the PULSTAR Ultracold Neutron Source</i> <ul style="list-style-type: none">– Monte Carlo neutron transport models in Fortran and C– Constructed and maintained high vacuum, cryostat, helium refrigeration, spectroscopy, and gas handling systems UNC at Wilmington - B.S., Physics (2009) minors in Computer Science (Java, C), Mathematics	
Experience	<ul style="list-style-type: none">• Additive manufacturing: FDM, SLA, SLS• Thermal management FEA / CFD simulation: Ansys, Comsol, OpenFoam• MCAD: Solidworks, Onshape, Fusion 360• ECAD: Altium, KiCAD, PCBA prototyping with SMD• Embedded C, Linux, Raspberry Pi, VS Code, Docker toolchains• Interface soup: IP, USB, SPI, I2C, UART, 1-wire, RS485• Versioning, reporting, and CI: Git/SVN, Jira, Jenkins, Docker• Analysis in Python, R, & MatLab• Laboratory electronics, remote sensing, and data acquisition• Industrial safety, cryogenics, and radiation environment• LabView, PLC programming	
Hobbies	Non-planar slicing and custom 3D printer builds, drone 3D scanning, electronics hacking, UV/NIR photography	