

SIDHARTH ANNAPRAGADA

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PROFILE

Electrical engineer with end-to-end custom PCB ownership — schematic capture and SPICE simulation through layout, DFM, fabrication, assembly, bring-up and debug — across ~20 boards. Depth in low-noise analog front ends, ADC/DAC signal chains, DC/DC power and bare-metal embedded C/C++. About two years full-time, plus four years running an engineering consultancy alongside school.

EDUCATION & PUBLICATIONS

B.S., Electrical Engineering & Behavioral Neuroscience — Northeastern University, Boston, MA Sep 2019 – May 2025
GPA 3.91/4.0 · University Honors Program · Graduate-level coursework in Analog IC Design and Micro/Nano Fabrication · Co-author, *Nature Methods* 21 (2024); posters incl. IEEE EMBS 2026

SKILLS

Analog & Digital Circuit Design: Low-noise sensor front ends, op-amps and instrumentation amps, active filtering; ADC/DAC signal chains; isolation; DC/DC power rails; grounding and noise troubleshooting; LTspice/SPICE

Embedded, Test & Software: Bare-metal C/C++; SPI, I2C, UART, USB; WiFi, BLE, cellular; stepper motor control firmware; oscilloscopes, DMMs, logic analyzers; spectrum analyzer and VNA operation; National Instruments DAQ hardware; test fixtures; MATLAB; Python

PCB & Hardware: Altium Designer and KiCad; 4–6 layer mixed-signal boards; controlled-impedance and differential-pair routing; DFM with fab and assembly houses; BOM creation and sourcing; bring-up and debug; design to IPC practice; SolidWorks enclosures; fine-pitch SMT soldering and rework (0402, QFN); stencil, pick-and-place and reflow operation (prototypes); wire harnesses and crimping

EXPERIENCE

Laboratory Technician (Electronics & Instrumentation) · Datta Lab, Harvard Medical School Jul 2021 – Jul 2023; Jan 2025 – Jul 2026
Boston, MA · Full-time Jan 2025 – Jul 2026 and during two 6-month co-ops; part-time otherwise

- Designed data-acquisition electronics (breathing-sensor amplifier, head-movement sensor, IMU-based active cable commutator), owning Altium schematic and layout, ADC signal chain, DC/DC power, embedded C firmware and SolidWorks enclosures
- Designed the low-noise analog front end for a respiration sensor (instrumentation amplification, anti-aliasing active filtering, ADC signal chain) to recover a low-amplitude physiological signal in an electrically noisy rig
- Integrated, tested and troubleshot deployed assemblies with oscilloscopes, DMMs and logic analyzers: PCB rework, cable and connector faults, sensor drift, grounding and noise
- Performed root-cause failure investigation on instrumentation failing mid-experiment
- Built an NI DAQ test fixture to characterize an odor-delivery device: valve timing, flow rate, concentration and repeatability
- Built an active cable commutator keeping tethered cabling untangled: stepper control firmware, IMU sensing, mechanical design
- Produced BOMs, fab notes and DFM packages for fab and assembly houses; managed part sourcing and obsolescence substitutions

Research Assistant (Instrumentation) · Action Lab, Northeastern University Feb 2021 – May 2025
Boston, MA · Full-time for 6 months in 2024; part-time otherwise

- Designed a movement-recording instrument (Altium, SolidWorks, embedded C) at under a tenth the cost of commercial equivalents
- Built a Python/OpenCV vision system with an Intel RealSense depth camera to capture 3D movement data from stroke patients

Founder & Systems Engineer · FutureScape Engineering Jan 2020 – Jan 2024
Boston, MA · Part-time, concurrent with school; client engagements ran sequentially

- Delivered ~15 custom electromechanical devices (analog front ends, mixed-signal PCBs, DC/DC power, embedded C/C++) from schematic capture through fabrication, assembly and bring-up
- Designed 4-layer mixed-signal boards with controlled-impedance and differential-pair routing; drove DFM with fab houses
- Shipped WiFi-, BLE- and cellular-connected sensing systems from schematic through fabrication and bring-up
- Hand-assembled and reworked fine-pitch prototypes (0402, QFN); operated pick-and-place and reflow equipment
- Built a bench test fixture for a client program to exercise and verify delivered hardware
- Provided remote troubleshooting support for hardware deployed at client sites
- Ran 5 client engagements in consumer IoT, industrial automation and agricultural tech; directed four engineers
- Gathered client requirements, scoped engagements and presented designs and trade-offs to non-engineering stakeholders

Research Assistant (Hardware Design) · Biomimetic Underwater Robotics Lab, Northeastern University Feb 2021 – Jun 2022
Boston, MA · Part-time

- Co-designed a sonar transceiver PCB for acoustic communication with an underwater robot (analog transmit/receive chain, ADC front end, microcontroller interface) through prototype fabrication and initial bench testing

PROJECTS

- Dynamica** (Apr 2025 – present): stroke-rehab finger-force system; mechanical design and software (collaborators: PCB, firmware)
- Capstone** (Sep 2023 – May 2024): finger-force rehab game controller; mechanical/electrical design (teammates: software, firmware)