

Siddharth S Singh

📍 Bangalore, India · remote, any time zone ✉ me@shantaram.xyz 🌐 [xyzshantaram](#) 🖱 [xyzshantaram](#) 🌐 [shantaram.xyz](#)

Hardware generalist. I have designed and fabricated PCBs, one of which ships in a product I sell. On that product I ran the whole loop: parametric CAD, print-parameter tuning, assembly jigs, packaging, and the firmware and backend behind it. My machining background is additive rather than CNC. I work the build-measure-iterate loop across mechanical, electronics, and software, and I document and cost what I build.

EXPERIENCE

PCB design+fabrication, firmware, and parametric CAD (OpenSCAD) work for various hardware projects.

Software Engineer (contract)

Apr 2024 — Present

Soapbox

Remote

- I write production Rust, C, C++, TypeScript, and Python. I have shipped a sandboxed runtime, a desktop daemon, and device firmware, so I build the tooling and the operator interface around a machine myself.
- [nostr-lora](#) — a specification and reference implementation carrying Nostr events over LoRa mesh radio, with a transport over Web Serial and Web Bluetooth.
- [Soapbox hardware signer](#) — an ESP32-WROVER-E NIP-46 signer with a 2.4-inch ILI9341/ST7789 TFT and a six-button pad with physical confirm and cancel, so each signature is approved on the device. I wrote its firmware too: display bring-up, on-device UI, Wi-Fi provisioning, and a scripting layer.

Founder and engineer

2023 — 2025

The Attention Button — an IoT desk toy, designed and sold

Bangalore

- **Mechanical design.** Designed the chassis, lid, knob, and internal structure as parametric OpenSCAD models, using BOSL, MCAD, and nutsnbolts for fillets, rails, and bolt and heat-set-insert geometry. Named constants drive it, so one change propagates to the assembly.
- **Fixturing.** Designed a dedicated **assembly jig** for seating the rotary encoder repeatably, then revised it once the first version proved awkward on the bench. Rails, nubs, and snap features were dimensioned around fits measured off real parts.
- **Design for manufacture.** Iterated the chassis across roughly **55 STL revisions** to v12 and a pre-production part. Ran print-parameter studies for layer height and surface roughness, then produced **batch plates for 1, 2, 5, and 9 parts** with slow-quality profiles for the production run.
- **Electronics and firmware.** Designed the board in EasyEDA around an ESP-12F, a rotary encoder, and a MAX7219 LED matrix, and wrote the firmware in C++ on PlatformIO and Arduino, with LittleFS storage, a captive-portal Wi-Fi setup flow, and MIDI playback.
- **Everything else shipping requires.** Backend, website, an illustrated instruction booklet, and a packaging-layout generator. Sold to customers, with the hardware and design files open.

Other hardware.

- [cardea](#) — Trezor Model One modified for USB-C and easy hand assembly.
- [pideck](#) — a handheld modular computer and my final-year project: a carrier board integrating a Raspberry Pi Zero W, a 3.5-inch LCD, a matrix keypad, TP4056 charging from an 18650, an MT3608 boost stage, and LM386 audio, drawing custom footprints for each module. Wrote the keyboard matrix driver in C against the Linux 6.1 kernel on Raspberry Pi OS, plus the launcher, a quiz app, and inter-device communication. Produced the full **BOM and cost analysis**: 3,931 INR per unit against a 3,325 INR budget, itemised to the resistor. Built three working units.
- **CH340G USB programmer** — the production programmer I built to flash Attention Button units during assembly. Its header mates with one I designed onto the product board.

SKILLS

CAD	Parametric modelling in OpenSCAD (BOSL, MCAD, nutsnbolts). Assemblies, fixtures, tolerance and clearance fits, fillets, heat-set inserts, fasteners. Learning SolidWorks and Fusion 360.
Manufacturing	FDM process tuning (layer height, surface finish, batch plates), iterative prototyping, measurement and fit checking, BOM and cost analysis. CNC and CAM: familiar with the concepts, not yet hands-on.
Electronics	ESP32, ESP8266, rotary encoders, SPI displays, LoRa radios, sensor and module integration, bring-up and debugging. PlatformIO and the Arduino toolchain.
Software	Rust, C, C++, TypeScript, Python, Lua. Firmware, desktop, backend, and web. Linux, Docker, git.
Working style	Hands-on, high ownership, used to being the only person responsible for a thing working. Based in Bangalore and happy on a factory floor.

EDUCATION

VIT Chennai

2020 — 2025

B.Tech, Electrical and Electronics Engineering

Chennai, India

- **Best Capstone project of 2024** in the Electrical and Electronics Engineering department, VIT Chennai — [pideck](#), a handheld modular computer.

REFERENCES

Chad Curtis — Soapbox James Sutton — Fractional Finance Jared Ready — Ready Cloud Consulting

Contact details on request.