# Ayodeji Fadayo

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## Summary

Mechanical engineering graduate with hands-on experience in robotics, hardware prototyping, CAD and additive manufacturing. SolidWorks modelling and manufacturing drawings, design for 3D printing, and integrating electronics and firmware into working prototypes. Contributed fabrication to published soft robotics research.

## Education

**Osun State University** — Osogbo, Nigeria
B.Eng: Mechanical Engineering — September 2025
Relevant Coursework: Machine Design, Manufacturing Processes, Mechanics of Materials, Control Systems, Engineering Drawing and CAD.

**Osun State Polytechnic** — Iree, Nigeria
National Diploma: Mechanical Engineering Technology — February 2021

## Engineering Experience

**Freelance CAD Design and Additive Manufacturing** — Osogbo, Nigeria
Self-employed — 2024 – Present

- Delivered 10+ custom 3D printed mechanical components on commission for university researchers, postgraduate students and private clients.
- Designed a helical screw rotor for a postgraduate micro-hydro project, and produced PLA and PETG test specimens at varied infill densities for doctoral materials testing.

**Osun State University, Department of Mechanical Engineering** — Osogbo, Nigeria
Research Fabrication Contributor — 2025

- Produced the 3D printed PETG gripper body for a soft robotics research project. Acknowledged in *Design of a PET Plastic-Loop Robotic Gripper with a Soft-Rigid Palm for Adaptive and Enveloping Grasping*, FME Transactions Vol. 54, No. 1 (2026).

**Automobile Workshops (SIWES / SWEP placements)** — Nigeria
Student Industrial Trainee — Sep–Nov 2023; Apr–Oct 2024

- Engine teardown, reassembly and fault diagnosis; steering rack, suspension, linkage and brake servicing.

## Projects

**Cam Displacement Diagram Plotter** — Final Year Project — 2025

- Produced the full SolidWorks model and 22-component manufacturing drawing package used by the workshop, plus exploded assembly views.
- Validated against dial-gauge data and traditional construction methods, confirming repeatability. **Total build cost $125 against commercial units priced up to $4,000.** Manuscript under review.

**AI Desk Companion Robot** — 2026

- Built an ESP32-S3 conversational desk robot (cloud AI API, microphone, amplified audio, 3.2-inch touch display) with a single-button gesture interface mapping six functions to one input.

**Additional Projects** — 2025 – 2026

- Planetary gearbox and custom wheel suspension assembly (SolidWorks); GSM phone prototype validated on a live call; Bluetooth BLE HID air mouse; Wi-Fi smart switch retrofit fitted behind a standard faceplate.

## Technical Skills

**Mechanical:** SolidWorks (part modelling, assemblies, 2D manufacturing drawings, exploded views, motion study, rendering); Fusion 360; gear and linkage design; design for manufacturability.

**Fabrication:** FDM 3D printing (Creality Ender 3 Pro, Ultimaker Cura); PETG, PLA, TPU, ABS; tolerance and clearance design, print parameter optimisation, enclosure design.

**Electronics:** Arduino Uno/Nano; ESP32, S3, C3; I2C, SPI, UART, PWM, ADC, BLE; servo and motor control, relay switching, TFT displays, GSM modules, accelerometer and ultrasonic sensors; soldering, multimeter diagnostics.

**Firmware:** Arduino C++; firmware integration, hardware-in-the-loop debugging and bring-up across 10+ builds, validating and fixing generated code against hardware I design and build.

**Additional:** English (fluent), Yoruba (native). Graduate Member, Nigerian Society of Engineers. Build channel Aybuildsx, 5,500+ followers.