

SHAYANTIKA DHAR

Embedded Systems Engineer · PCB Designer · IoT Developer

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PROFESSIONAL SUMMARY

Electronics & Communication Engineer with hands-on experience in embedded systems, IoT product development, and PCB design. At xLayer Technologies, built real-world IoT systems including a robotic arm and a stock machine using ESP32 and Teensy microcontrollers, and designed and manufactured a PCB for the stock machine using KiCad, Eagle, and Altium Designer. Skilled in firmware development, circuit design, soldering (SMD & THT), and full hardware bring-up. Passionate about building intelligent, connected hardware solutions from concept to production.

TECHNICAL SKILLS

Microcontrollers	ESP32, Teensy, Arduino
PCB Design	KiCad, Eagle, Altium Designer — schematic capture, layout, routing, DRC, Gerber export
PCB Skills	SMD & THT soldering, rework, component assembly, board bring-up, ESD safety
Protocols	UART, SPI, I2C, GPIO, CAN (basic)
IoT & Wireless	ESP32 Wi-Fi/BLE, sensor integration, cloud-connected systems, LoRa (basic)
Firmware/SW	C, C++, Python (MicroPython), Embedded C
Testing & Debug	Multimeter, oscilloscope, logic analyser, circuit-level debugging
Robotics	Motor control, servo systems, self-balancing algorithms, PID control
Tools	Git, Jira, VS Code, PlatformIO, Arduino IDE

PROFESSIONAL EXPERIENCE

Junior Software & Hardware Engineer — IoT Department · xLayer Technologies

January 2024 – June 2025 · 1.5 Years

- ▶ Designed and developed a Stock Machine using ESP32 microcontroller — handled full hardware-software integration from firmware to enclosure
- ▶ Designed the PCB for the stock machine from scratch using KiCad and Eagle — created schematics, component placement, routing, and exported Gerber files for manufacturing; PCB was successfully fabricated
- ▶ Built a Robotic Arm project using Teensy microcontroller — programmed servo motor control, implemented movement sequences, and handled all wiring and assembly
- ▶ Performed SMD and through-hole (THT) soldering, rework, and component assembly across multiple IoT hardware projects
- ▶ Conducted board-level testing and debugging using multimeter and oscilloscope to validate circuit functionality post-assembly
- ▶ Read and interpreted PCB layouts, assembly drawings, and BOMs for hardware development and production
- ▶ Worked with communication protocols including UART, SPI, and I2C for sensor and peripheral integration
- ▶ Maintained ESD safety standards and quality protocols throughout the production and testing process

- ▶ Collaborated with cross-functional teams in Agile sprint workflows using Jira and Git version control

PROJECTS & ACHIEVEMENTS

Self-Balancing Robot | *Arduino, MPU6050, PID Control, Motor Driver*

- ▶ Built a two-wheeled self-balancing robot using Arduino and MPU6050 IMU sensor for real-time tilt measurement
- ▶ Implemented PID (Proportional-Integral-Derivative) control algorithm to dynamically balance the robot by adjusting motor speed and direction
- ▶ Handled all hardware assembly, wiring, soldering, and firmware development end-to-end
- ▶ Tuned PID constants iteratively through testing to achieve stable, responsive balancing behaviour

Accenture Innovation Challenge 2021 — Runner Up | *Embedded Systems, Circuit Design, Soldering*

- ▶ Participated in the Accenture Innovation Challenge 2021 as part of a group — team secured Runner Up position nationally
- ▶ Personally responsible for all hardware connections, circuit assembly, and soldering work for the prototype
- ▶ Designed and wired the complete embedded hardware setup powering the innovation project
- ▶ Demonstrated strong practical hardware skills under competition conditions and tight deadlines

EDUCATION

B.Tech – Electronics & Communication Engineering

Dr. Sudhir Chandra Sur Degree Engineering College · 2020 – 2023

Diploma – Electronics & Telecommunications Engineering

NIELIT (National Institute of Electronics & Information Technology) · 2017 – 2020

ACADEMIC PUBLICATIONS

- ▶ Review on DMTFET-based Biosensor — research on semiconductor device modelling for biosensor applications
- ▶ Relative Study on Performance Analysis of DMFET & DMTFET-based Transducers — comparative analysis of dual-metal gate FET structures

CORE COMPETENCIES

- ▶ PCB design, fabrication & bring-up
- ▶ ESP32 & Teensy firmware development
- ▶ IoT product development end-to-end
- ▶ SMD & THT soldering and rework
- ▶ Robotics — PID, servo & motor control
- ▶ Circuit testing & oscilloscope debugging
- ▶ UART / SPI / I2C protocol integration
- ▶ Schematic capture & Gerber generation