Mohit Patel

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Education

- **Jabalpur Engineering College** — Jabalpur, India
  Bachelor of Technology - Electrical Engineering — *2024 - 2028 (Expected)*
  Relevant Coursework: *Power Systems, Switchgear & Protection, High Voltage Engineering, Electrical Machines, Power Electronics, Renewable Energy Systems, IoT, Embedded Systems*

Skills Summary

- **Languages**: Python, C/C++, MATLAB, SQL, Bash
- **Power Systems**: Switchyard Equipment (420kV/132kV/33kV), SCADA, Protection Relays, Circuit Breakers
- **Testing & Commissioning**: HV AC/DC Testing, IR Testing (Megger), Tan Delta, DGA, Transformer Ratio & Polarity
- **Generator Systems**: Stator/Rotor Windings, Hydrogen/Water Cooling, Excitation (PMG, AVR), Bearing Systems
- **Renewable Energy**: Floating Solar PV, Hydropower, Solar Inverters, Grid Integration, Power Evacuation
- **IoT & Embedded**: Raspberry Pi, ESP8266, Arduino, Sensor Integration, PCB Design (Altium)
- **AI/ML**: YOLOv8, Deep SORT, OpenCV, TensorFlow, Scikit-learn, Flask
- **Tools**: MATLAB, Simulink, AutoCAD (Basic), Git, Linux, Docker

Training & Internships

- **UPPCL - High Voltage Switchyard Training** — Varanasi, India
  Vocational Trainee (420kV/132kV/33kV Sub-stations) — *June 2026 (4 Weeks)*
  - **Switchyard Equipment**: Hands-on experience with SF6 circuit breakers, isolators, CTs, PTs, and lightning arresters.
  - **SCADA & Automation**: Observed SCADA-based substation automation for fault detection and protection relay coordination.
  - **Testing**: Participated in transformer oil testing (DGA), insulation resistance (IR) testing, and busbar configurations.
  - **Protection Schemes**: Studied protection schemes for 132kV transmission lines and power evacuation infrastructure.
- **BHEL Haridwar - Turbo Generator Manufacturing** — Haridwar, India
  Vocational Trainee (Heavy Electrical Equipment Plant) — *July 2026 (2 Weeks)*
  - **Generator Manufacturing**: Observed turbo generator production – stator core stamping, rotor forging, winding, insulation, and assembly.
  - **Winding & Cooling Systems**: Studied stator (bar type, hollow conductors, water cooling, corona protection) and rotor winding (field winding, retaining rings), along with hydrogen and water cooling systems.
  - **Testing**: Witnessed high-voltage insulation testing (AC/DC), DC resistance measurement, impedance testing, and excitation systems (PMG, AVR, brushless exciter).
  - **Monitoring Systems**: Explored bearing assembly, vibration monitoring, and RTD-based temperature sensors.

Projects

- **PV Cell Modeling & Simulation (MATLAB/Simulink)**: (2025-2026) Developed single-diode and double-diode PV models. Simulated I-V/P-V characteristics under varying irradiance (200-1000 W/m²) and temperature (25-75°C). Analysed series/shunt resistance effects on fill factor. Validated with commercial PV module datasheets – ¡3% error in MPP estimation. Explored MPPT algorithms (P&O and Incremental Conductance) for grid-tied solar inverters.
- **AI-Based Wildlife Monitoring System (IoT + Edge AI)**: (2024-2025) Real-time animal detection using YOLOv8 + Deep SORT on Raspberry Pi 4 – 92.3% accuracy, 1.3 FPS. Integrated GPS/camera modules. Built Flask + Folium dashboard for geospatial mapping – ¡2.5% geolocation error. Edge-AI optimization for low-power deployment.
- **ESP8266 Flight Controller PCB (IoT Hardware)**: Designed complete hardware schematic – integrated MPU6050, MOSFET motor stages, power regulation. Generated manufacturing-ready BOM and Gerber files – ensured DRC/ERC compliance.
- **Smart BMS for Electric Vehicles**: Designed Smart Battery Management System – SoC and SoH estimation algorithms using C++ on ARM Cortex-M. Integrated CAN communication for real-time monitoring.
- **Google Cloud Arcade**: 75+ skill badges, 280+ labs, 55+ courses – GCP, Kubernetes, BigQuery ML, serverless app development.

Certifications & Achievements

- Semiconductor Fabrication 101 – Purdue / UT Austin / Intel (2025)
- MATLAB Onramp, Simulink Onramp – MathWorks (2026)
- Quantum Error Correction / QML – IBM / Qiskit (2026)
- C++ Certified Entry-Level Programmer – Cisco Networking Academy
- Smart India Hackathon 2025 – Finalist (Internal Round)
- CodeX2.0 – Top 50 Teams out of 500
- Vibe Coding Hackathon – Top 20 solo participant (140+ participants)

Leadership & Community

- **Tech Lead – GDG on Campus (Google Developer Groups)** Jabalpur, India
  Lead 50+ student devs – workshops on Python, AI/ML, IoT, Web. Mentor open-source. *Aug 2025 - Present*

- **Open Source Contributor** GitHub
  Contributed to Python, C/C++, IoT repos – algorithms, data structures, embedded. *Oct 2023 - Present*