

# Pranav Gupta

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## SUMMARY

Embedded Engineer with a strong foundation in electronics and firmware development. Experienced in 3D printing systems, rapid prototyping, and custom PCB design. Focused on building reliable, end-to-end embedded solutions.

## WORK EXPERIENCE

- **Thinkmetal Pvt. Ltd., Chennai, India** | *Embedded Engineer* [Website](#) | Jan 2025 – Present
  - Developed custom Klipper firmware and tested 3D printer motherboard integration for metal printers using C++/Python
  - Design and optimisation of mechanical systems and printer electronics improving mechanical assembly efficiency by 15%
  - Designed PCBs and implemented communication protocols to interface multiple peripheral devices with motherboard
  - Improved print quality and overall system performance through hands-on R&D on profiles and rapid prototyping by 30%
  - Enhanced skills used in electronic & mechanical assembly of Voron Trident and proprietary FFF Metal Printer ([Sistem T1](#))
  - Ensured electrical/mechanical safety with grounding, ESD-safe PPE, LOTO tags, E-stop, and standard industrial protocols
  - Maintained structured documentation with tool checklists, safety logs, and daily tracking of research, tests, and updates
- **Jugaad Robotics Club, UIET, Chandigarh, India** | *President* [Website](#) | Dec 2021 – Oct 2024
  - Worked on robotics and embedded systems prototypes while leading technical events, internal builds, and club operations
  - Actively participated in hands-on projects and mentored students in microcontrollers, sensors, and prototyping
  - Led Industry 4.0-focused projects like E-Conveyer and Effluent Monitor, under faculty guidance and peer collaboration
- **ThinkMetal Pvt. Ltd., Chennai, India** | *Software Developer Summer Intern* [Website](#) | Jun 2024 – Aug 2024
  - Built React.js UI with DevTools & CLI-based tools and SEO improvements, increasing website visibility and traffic by 40%
  - Worked across system repos using Tauri, Node.js, WRTC, WebSocket, Python APIs, and on embedded Linux SBC systems.
  - Enabled cloud access for remote 3D printer control, improving user-machine accessibility by approximately 60%
  - Implemented encrypted cloud communication for secure data exchange between user interface and 3D printer firmware
- **MDaRT-DIC, Panjab University, Chandigarh, India** | *R&D Intern and Mentor* [Website](#) | Mar 2022 – Jul 2023
  - Led design of prosthetic arm by hybrid signal acquisition, 3D Scans, additive manufacturing enhancing user function
  - Co-developed medical 3D printer for 500°C PEEK printing. Handled mechatronics and studied laminar flow in printing
  - Mentored students from various colleges during summer training in embedded systems, prototyping, and 3d printing

## EDUCATION

- **University Institute of Engineering and Technology, Panjab University** 2021 – 2025  
*B.E. in Information Technology - CGPA: 7.26/10* Chandigarh, India
  - **Course:** Computer Networks & Security, Microprocessors, Digital Electronics, Theory of Computation, IoT, C++, Python
  - **Faculty Guided Projects:** Voice Assistant (ML) [Major], UIET Result Portal (Web), Indian Army Archives Portal (Web)
  - **Volunteer:** Class Representative, Linux Speaker @ Software Freedom Day '23, PU, Programming Club, Sports Committee

## SKILLS

- **Firmware/Tools:** Klipper, Marlin, STM32CubeIDE, ROS, Free RTOS, Embedded C, Arduino IDE, PlatformIO, KiCad, Linux
- **Boards/Protocols:** STM32HXXX, ESP32, 3D Printer Boards, RaspberryPi, Latte Panda, SPI, I2C, Ethernet, UART, CAN
- **Hardware/Tools:** Control Systems, PCB Designing, Sensor integrations, Soldering, Crimping, Mechanical Assembly
- **Programming/Tools:** C++, Python, HTML, ReactJS, MERN, Jinja2, Shell, VS Code, Vim, Git, Docker, Postman, AWS, Figma
- **3D Printing:** Assembly & Debugging (Ender, Voron, Bambu X1C), Slicing (CrealityPrint, Orca, Prusa, Cura), Fusion 360
- **Soft Skills:** Continuous Learning, Strategic Thinking, Time Optimization, Collaboration, Leadership, Documentation

## PROJECTS

- **Nano Navigator** [STM32F1XXX, Buck/Boost Converters, DC motors, L293D IC, IR and Ultrasonic Sensors, Soldering] 2024  
Powered by advanced sensors, precise motors, and smart algorithms, the micro mouse navigates mazes efficiently.
- **Faraday Station** [Copper inductive coils, EMI, Rectifier, Voltage Regulators, Current Regulators] 2024  
Prototype for wireless charging of moving electric vehicles using a chain of induction plates embedded in roads.
- **Effluent Monitor** [ESP32, IR Distance Sensor, Floats for industrial chemicals, Wi-Fi / BLE based mobile app] 2023  
IoT solution for real-time effluent level monitoring in chemical tankers to ensure secure and tamper-proof transportation
- **E-Conveyer** [ESP32, NEMA17 Stepper Motors, IR sensors, Wi-Fi / BLE based mobile app] 2023  
IoT-based system for real-time monitoring of assembly line products via a mobile app with real-time alerts.
- **Medical Grade 3D Printer** [BTT SKR, Extruder for PEEK printing, FDM assembly, Laminar Flow, Pronterface, Marlin] 2023  
FDM 3D printer for 500°C PEEK printing with high-temp hotend, mechatronic systems, and laminar airflow for precision
- **Bionic Prosthetic Arm** [Myoware sensors, EEG cap, servo motors, arduino, esp32] 2022  
Transradial prosthetic arm using EEG/EMG bio-signals, 3D anatomical scanning, FFF/SLA 3D printing to improve user control

## ACHIEVEMENTS

- **1st Place Cognizance (National Level - IIT Roorkee):** E-Conveyer, Faraday Station 2023, 2024
- **AIR-7 Technothlon (IIT Guwahati):** National level competition 2018
- **Junior Scientist Award (Bhavan Vidyalaya):** Leadership and technical recognition 2017