

# PIYUSH KUMAR

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## EDUCATION

**Birla Institute of Technology, Mesra (Off Campus, Patna)**  
*B.Tech in Electronics and Communication Engineering*

Aug 2022 – Present  
CGPA: 6.75 / 10

**B.D. College, Patna**  
*Class 12th (Science Stream)*

2021  
72.4%

**DAV BSEB, Patna**  
*Class 10th*

2019  
79.8%

## EXPERIENCE

**PeakStreak Pvt. Ltd.**

June 2025 – July 2025

Intern – Software DevelopmentRemote

Developed automation logic in **Python** for device-level testing and data handling tasks, reducing manual data processing time by **30%**.  
Optimized signal-handling routines for sensor-driven systems, improving control latency by **15%**.  
Collaborated with cross-functional teams for **hardware-software integration and debugging**, accelerating prototype delivery by **20%**.

## TECHNICAL SKILLS

**Programming Languages:** C, C++, Python

**Tools & Platforms:** LabVIEW, MATLAB, Multisim, Git, VS Code

**PLC & Automation:** Ladder Logic, PLC Programming (Siemens / Allen Bradley), Control Systems

**Hardware Skills:** Soldering, Wiring, Oscilloscope Handling, Signal Measurement, Testing Rigs

**Core Electronics:** Circuit Theory, Sensors & Actuators, Signal Conditioning, Data Acquisition

**Additional:** Data Structures & Algorithms, Operating Systems, Debugging Techniques

## PROJECTS

**FitMind: Full-Stack AI Microservice Application**

*React.js, Node.js (Express), Hugging Face Transformers, MySQL*

Architected a full-stack web application with a **microservice-oriented backend**, where a Node.js orchestrator communicates with two dedicated **Python** microservices for AI model inference.  
Deployed an AI pipeline performing NLP-based emotion detection with **90% accuracy** and generating personalized responses using external generative AI APIs.

**Human Detection & Counting System**

*Python, YOLOv8, OpenCV, Electron, SQLite*

Built a real-time human detection and counting system using the YOLOv8 model, achieving over **95% accuracy**.  
Developed a cross-platform desktop GUI using **Electron.js** for seamless data visualization and user interaction.  
Integrated an **SQLite** database for persistent storage, managing over **10,000 data points** efficiently.

**Design and Development of Metamaterial Inspired Antenna**

*HFSS, CST Microwave Studio, MATLAB*

Engineered and simulated a **metamaterial-based antenna** structure for enhanced performance in **5G and IoT applications**.  
Optimized **DNG (Double-Negative)** and **SNG (Single-Negative)** models for **miniaturization and bandwidth enhancement**.  
Analyzed key antenna parameters such as **return loss, VSWR, gain, and radiation pattern** through EM simulations.  
Validated outcomes with **HFSS/CST simulations**, achieving a **12% gain improvement** and enhanced impedance matching consistency.  
Documented and presented results under the supervision of **Dr. Ritesh Kumar Badhai**, Department of ECE, BIT Mesra.

## ACHIEVEMENTS

**Adobe India Hackathon 2025:** Advanced to prototype round, ranked among top 50 teams nationally.

**PRMO Qualifier:** Recognized for strong analytical and mathematical aptitude.

**NTSE Stage 2 Qualifier:** Demonstrated exceptional academic excellence and problem-solving ability.