

## Sumit Kr Yadav

Electronics & Electrical Engineer

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### CAREER OBJECTIVE

To find an exciting and challenging entry level position in any industry as per my capability alongside a company who will continuously motivate and drive me to do my best and improve on my skills and abilities in order to be able to assist the company in achieving its company mission and goals.

### ACADEMIC BACKGROUND

Course	University / College	Year Of Passing	Percentage / Div
M-Tech (EE) (POWER ELECTRONICS & DRIVES)	NIT, Jamshedpur	2025-27	Pursuing
B-Tech (ECE)	RVS-CET, Jamshedpur	2020-24	7.41 (CGPA)
Diploma (ECE)	Jharkhand University of Technology, Ranchi {Vidya - Memorial Institute of Technology}	2018-21	83.06 %

### TECHNICAL SKILLS

- ❖ Strong understanding of Analog & Digital Electronics
- ❖ Digital & Analog systems (Microcontrollers, Logic Gates, Arduino)
- ❖ PCB layout Circuit Design/cabling - (Fusion 360-Electrical,LT-Spice)
- ❖ Communication Protocols ( I2C , SPI , UART ) & Hardware Testing
- ❖ BOM Making
- ❖ Arduino coding (C/C++),Sensor interfacing ,Actuator control , Arduino IDE Codes
- ❖ Embedded C Programming for Microcontroller
- ❖ Firmware Development (C/C++)
- ❖ PLC basics , MATLAB
- ❖ Embedded Systems & Electrical Equipment Troubleshooting
- ❖ Maintenance & Hardware operations
- ❖ Process Improvement & Maintenance Orientation
- ❖ TQM, TPM, Value Analysis & Value Engineering
- ❖ Control systems basics (open/closed-loop)
- ❖ Attentive Listening & Effective Oral Communication Skills - (Certified by TCS iON group)
- ❖ Ability to Quickly Create and Apply Ideas and Solutions

### INTERNSHIPS

- ❖ TATA STEEL Summer Vocational Training (4 weeks) under project CNC machines (From 27<sup>th</sup> April 2020 to 25<sup>th</sup> May 2020)
- ❖ Industrial Training Internship on PLC at Tata Steel SNTI, Jamshedpur

## ACADEMIC RESEARCH & PROJECTS

- ❖ Projects on Digital Design & Interface Protocols : *I2C (Master/Slave design) , SPI Controller Design*
- ❖ Designed and developed a prototype system to enhance photovoltaic charging efficiency using ultraviolet spectrum optimization.
- ❖ Biometric-Based Smart Attendance System (Designed, Fabricated & Tested)

## EXPERIENCES

- ❖ Associate Engineer at *ROSA TECH PVT LTD* | (3<sup>rd</sup> Dec 2023 - 9<sup>th</sup> Dec 2024)
  - PCB layout Design/cabling(Auto routing), Flatning, schematic, 3D, 2D, Wiring harness., Autodesk Fusion, Power Electronics, HMI, Electronics Hardware Development & Testing, Electrical Maintenance, CNC machine operations, Debugging, Embedded system, Robot Framework
- ❖ DET-B1 at *DAIKIN INDIA PVT LTD* | (30<sup>th</sup> July 2021 - 15<sup>th</sup> Sep 2021)
  - Quality & Machine Maintenance
- ❖ Subject Matter Expert - Established and managed a private institute, providing high-quality coaching in Mathematics, Physics, Chemistry, and Biology to students of classes 5 to 10 for the past 5 years, focusing on conceptual clarity, exam preparation, and personalized learning strategies.

## HOBBIES & INTEREST

- ❖ **TABLA player (Sr. Diploma Prabhakaram)**  
Certified Senior Tabla Artist (PRABHAKARAM Degree) from *Prayag Sangeet Samiti, Allahabad*, demonstrating advanced proficiency in classical rhythm, taal structure, and performance techniques.
- ❖ Multi-Instrumentalist **with versatile command over** Guitar, Dholak, Harmonium, and Pakhawaj
- ❖ **Skilled in** composing, improvising, and arranging **musical pieces across Indian classical, semi-classical, and contemporary styles.**

## ABOUT ME

Date of Birth : 17/07/1999  
Gender : Male  
Birth Place : Jamshedpur, Jharkhand  
Familiar Languages : English, Hindi  
Contact : 6205369081 / 7620164833

*I hereby declare that the above information is true to the best of my knowledge and belief.*

*[Sumit Yadav]*

## **PROJECTS**

**1. I worked on the development of Taurus, a TRL-6 manual-controlled UGV platform developed at ROSA Tech Pvt. Ltd. The system was built completely from scratch.**

*The platform has two variants:*

*Taurus Mk-1 – 100 kg payload capacity with a maximum speed of 5 km/h, designed for warehouse and industrial indoor applications.*

*Taurus Mk-2 – 500 kg payload capacity with a maximum speed of 25 km/h, designed as an all-terrain vehicle for mining, steel, iron, and defense-related applications.*

***In this project, I was responsible for designing the electronics architecture and developing the firmware.***

***My contributions include:***

*Designing single-layer, double-layer, and four-layer PCBs.*

*Developing high-speed PCBs for communication modules.*

*Writing firmware for 32-bit ARM Cortex-M7 microcontrollers (Teensy 4.0).*

*Implementing communication protocols such as I2C, UART, SPI, USB.*

*Designing and developing DC motor drive control systems.*

***Testing and debugging using: (Hardware Materials)***

*Digital Multimeter*

*Load meter*

*Oscilloscope*

*1 GHz Mixed Domain Oscilloscope (100 MS/s sampling rate)*

**2. Biometric-Based Smart Attendance System (Designed, Fabricated & Tested)**

*Goal was to develop a secure, automated, real-time biometric authentication system for attendance logging.*

***System Architecture Design***

- Designed overall system architecture*
- Selected microcontroller platform*
- Defined communication flow between biometric sensor and controller*

### ◆ *Hardware Design & Fabrication*

- *Designed interface circuit for fingerprint module*
- *Designed regulated power supply (5V/3.3V)*
- *Assembled and soldered hardware components*
- *Performed circuit debugging and testing*

### ◆ *Embedded Programming*

- *Developed firmware for:*
  - *User enrollment*
  - *Fingerprint matching*
  - *Attendance recording*
- *Implemented serial communication (UART/I2C)*
- *Handled error conditions and retry logic*

### ◆ *Data Management*

- *Stored attendance records in memory (EEPROM/SD/PC interface if applicable)*
- *Implemented time-based logging (if RTC used)*

### ◆ *Testing & Validation*

- *Conducted*
  - *Functional testing*
  - *Accuracy testing*
  - *Authentication speed testing*
  - *3D hardware manufactured by 3D printing machine*

*I chose this project to develop practical expertise in embedded system design, sensor interfacing, and secure authentication mechanisms while solving a real-world automation problem.*

**3. We developed an automated tensile testing system for steel rebars using a 6-axis robotic manipulator (6 DOF) with a 15 kg payload capacity.**

#### **Workflow:**

*Robotic manipulator picks up steel rebar.*

*Places the rebar precisely inside the Universal Tensile Machine (UTM).*

*UTM pulls the rebar until fracture (breaking point).*

*A computer vision module calculates elongation.*

*Test results are automatically logged and analyzed.*

## **Key Technical Highlights**

*Robotic System*

*6 Degree of Freedom Manipulator*

*15 kg Payload Capacity*

*High positional accuracy for precise placement*

*Automated gripping and release mechanism*

*Computer Vision Module*

*Real-time elongation measurement*

*Image-based strain calculation*

*98% measurement accuracy*

*Automated break-point detection*

## **Control & Communication Architecture**

### **My contribution:**

*Design and development of the robot control module*

*Wireless communication system between:*

*Manipulator controller*

*NVIDIA Jetson main processing unit (AI + vision system)*

*Jetson handled:*

*Image processing*

*Elongation calculation*

*Data logging*

*System coordination*