



**Ayush**

Roll No.: 2201188ME

B.Tech

Mechatronics and Automation Engineering

Indian Institute of Information Technology, Bhagalpur

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Portfolio Website

GitHub Profile

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## EDUCATION

### •Indian Institute Of Information Technology, Bhagalpur

2022-26

Mechatronics And Automation Engineering

CGPA: 8.32(Absolute)

### •Happy Model School Varanasi, 12th

2021

Central Board of Secondary Education

Percentage: 93

### •Happy Model School Varanasi, 10th

2019

Central Board of Secondary Education

Percentage: 89

## TECHNICAL SKILLS AND INTERESTS

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

**Machine Learning:** Supervised and Unsupervised Learning

**Deep Learning and Neural Networks:** ANN, CNN, RNN, LSTM

**Generative AI:** LLMs, NLP, RAGs, Autonomous Agents

**Frameworks:**ROS(Robot operating system) Langchain, LlamaIndex, Mistral, Langgraph

**Tools and Software :**TensorFlow, Keras, Jupyter Notebook, Spyder, PowerBI, MS Excel,ANSYS, Solidworks, MSC ADAMS,Origin Labs,Matlab

**Certification :** Machine Learning Specialization and Generative AI for Everyone by DeepLearning.AI

## EXPERIENCE

### •INTELLICLICK SERVICES PRIVATE LIMITED

Artificial Intelligence Intern

- Developed an AI-driven attendance platform with real-time image recognition for 200+ users, improving accuracy by 30% and adopted by multiple institutions. Enhanced educational tools with voice filtering and OCR, boosting clarity and text recognition by 40%.

## PROJECTS

### • Ti-6Al-4V Alloy Tensile Testing and Simulation

GitHub

- Fabricated ASTM-compliant Ti-6Al-4V specimens using Wire EDM, including one heat-treated at 750°C, designed in SolidWorks.
- Conducted tensile testing and validated Ansys Workbench simulations against experimental data, ensuring high accuracy in mechanical behavior analysis.
- Highlighted Ti-6Al-4V's superior properties, such as a high strength-to-weight ratio and corrosion resistance, for aerospace, automotive, and biomedical applications.

### • BOT ROS : Mobile bot based on ROS2

GitHub

- Based on ROS2 featuring a differential bot controller for precise motion control.
- Integrated IMU and LiDAR with Kalman filter-based fusion for enhanced environmental perception and noise mitigation.
- Designed and implemented a joystick-controlled interface for intuitive bot operation.
- Utilized NAV2 SLAM for real-time mapping and localization in dynamic environments.

### • Cyclic Loading and Failure Analysis of Connecting Rods

GitHub

- Simulated tensile and cyclic load-unload tests in Abaqus CAE to analyze mechanical behavior and predict fatigue resistance under operational stress.
- Evaluated strain progression, damage variables, and elasticity modulus through stress-strain analysis, focusing on plastic deformation and material damage.
- Identified key failure mechanisms, including fatigue cracks, stress concentrations, and material defects, to improve design durability.

### • Cylindrical Manipulator Pick and Drop Robotic Arm

GitHub

- Designed a cylindrical robotic manipulator with  $\pm 0.1$  mm accuracy for precise pick-and-drop tasks, handling loads up to 500g.
- GRBL firmware and integrated computer vision for accurate object identification, achieving 95% movement accuracy and reducing error rates by 25%.

- Established Arduino-Raspberry Pi communication, enhancing processing speed by 20% with Raspberry Pi as the central processor.

### OmniAssist: All-in-One AI Assistant

[GitHub](#)

- Built an AI assistant for document summarization, video note generation, news aggregation, and multilingual code generation, reducing manual workload by 50% and increasing task speed by 20%.
- Integrated internet access, Gmail functionality, LangChain, and ChromaDB, improving data retrieval accuracy by 25% and reducing processing time by 40%.
- Automated attendance processes for seamless integration with virtual platforms, increasing operational efficiency.

### SpamBERT: A BERT-Based Spam Detection System

[GitHub](#)

- Fine-tuned a pre-trained BERT model for spam email classification, achieving 95% accuracy on a dataset of over 10,000 emails, with preprocessing techniques that reduced data noise by 20% to enhance model performance.
- Optimized model performance using precision, recall, and F1-score (0.93), and reduced false positives by 15% through confusion matrix analysis and classification reports.

### AI-Board:Enhanced AI Smart Whiteboard

[GitHub](#)

- Implemented EasyOCR-powered recognition system with 95% accuracy for multilingual and mathematical content.
- Developed responsive canvas-based frontend with real-time stroke analysis reducing latency by 200ms.
- Created advanced image preprocessing pipeline improving low-quality input recognition by 40

## CERTIFICATION

### •Machine Learning Specialization

21-01-2024

*DeepLearning.AI*

### •Applications of UAVs in Agriculture

17-05-2024

*Indian Institute of Information Technology Bhagalpur.*

### •ROS2 Robotics Developer

23-09-2024

*Raymond Andrade on Udemy*

### •Industrial Robotics

24-05-2024

*Udemy*

## POSITIONS OF RESPONSIBILITY

### •Training and Placement Coordinator, Indian Institute of Information Technology, Bhagalpur

2022-26

## ACHIEVEMENTS

- Secured **All India Rank 388** in Amazon ML Challenge 2024 with over 75000+ teams registered.
- **19th rank in IRoC-U** ISRO Robotics Challenge all over India .
- **Rank of 34th** all over India for Flipkart grid robotics challenges.