Ajay Kumar

MTECH CSE
BTECH CSE
National Institute Of Technology, Hamirpur

Mobile: +91-9805429142
Mail: ajaydhiman667@gmail.com
LinkedIn: Ajay Kumar

Education

•National Institute Of Technology, Hamirpur *2022-2024*
MTech CSE CGPA: 7.47

•University Institute of Technology, Shimla *2017-2021*
BTECH CSE Percentage: 80.6

•Shivalik Science Sr Sec School, Kharuni *2015-2016*
HPBOSE 12th Percentage: 88.8

Research

•Enhancing Hindi Named Entity Recognition using XLM-RoBERTa *May, 2023 – June, 2024*
Springer (icSoftComp2024), Thailand

- **Tools & technologies used**: Python, Deep Learning, Numpy, Pandas
- Developed a fine-tuned **XLM-RoBERTa** model for Hindi Named Entity Recognition (NER), achieving an F1 score of **89.9%** and accuracy of **97.3%** on the HiNER dataset. Leveraged advanced transfer learning techniques to address challenges in low-resource languages, enhancing the model's ability to classify named entities accurately. Utilized and optimized the HiNER dataset with over 100,000 annotated sentences, significantly improving NER performance for diverse Hindi texts.

Personal Projects

•Smart Home Automation using Arduino
IoT-Based Remote Appliance Control System

- **Tools & Technologies**: C++, Arduino UNO, MQTT, IFTTT, Blynk API
- Led the development of a smart home automation system using **Arduino UNO** and C++ to remotely control and monitor 5+ household appliances. Integrated **MQTT**, **IFTTT**, and **Blynk API** for cloud-enabled, real-time control via mobile interface.
- Achieved **65% sensor data accuracy** across 20+ test scenarios and reduced manual intervention by **over 60%**, enhancing energy efficiency and user convenience.

•Smart Human-Following Trolley with Automated Billing
RFID-Based Autonomous Retail Shopping Prototype

- **Tools & Technologies**: C++, Arduino UNO, RFID, Ultrasonic Sensors
- Designed a human-following shopping trolley using **RFID** and **ultrasonic sensors** for automated product identification, real-time billing, and obstacle detection. Enabled autonomous movement within a 1–2 meter range.
- Achieved **90% item recognition accuracy** across 25+ test scenarios, reducing human interaction during checkout by **10–15%**, thereby improving retail shopping efficiency and user convenience.

Technical Skills and Interests

Languages: C, C++, Python
Tools & IDEs: Visual Studio Code, Jupyter
Cloud/Databases: MySQL, DBMS
Soft Skill: OpenCV, Numpy, Tensorflow
Coursework: Data Structures and Algorithms, Computer Networks, Compiler Design, Digital Logic, Computer Organization and Architecture, Cache, Parallel and Concurrent Programming, Distributed Systems, Harvard Architecture, Von neumann Architecture, Artificial Intelligence, Operating Systems

Roles and Responsibility

–**Teaching Assistant,** NIT Hamirpur *2023-2024*
–**Training and Placement Representative,** NIT Hamirpur *2023-2024*

Achievements

–**UGC NET** CSE *2024*
–**GATE** CSE *2024*