AYUSH KUMAR SINGH

ACADEMIC DETAILS

Year	Degree / Board	Institute	GPA / Marks(%)
---	B.Tech in Production & Industrial Engineering	Indian Institute of Technology Delhi	7.25
2021	CBSE	Woodrow public school	79.8
2019	ICSE	Hartmann college	94.2

SCHOLASTIC ACHIEVEMENTS

- **Letter Of Recommendation (Mekuva Technologies):** For outstanding performance and contributions during internship [2024]
- **Qualified NDA Exam** conducted by **UPSC** being top **0.8%** among the **6lakh+** applicants for **SSB** interview round [2021]
- **ICSE Meritorious Award** in the top **3%** among the **1.84 lakh** students for astounding performance in all subjects [2019]

INTERNSHIPS

- **Mekuva Technologies Private Ltd, Hyderabad, Telangana**: *Mechatronics Engineer* [May 2024 - Jul 2024]
  - Developed a **3D printing error detection** model with **YOLOv5**, and achieved a **90%+** accuracy; integrated with a **Flutter** app
  - Automated NDA signing and customer quote generation using **React and TypeScript** in order management software
  - Designed a **tracking system** for sheet metal punching system using **limit switch, Makerbase board**, and **Arduino IDE**
  - Engineered a **high-temperature 3D printer**, optimizing material selection, and structural **CAD** design using **Fusion 360**
- **SuperTranslate.ai, Hyderabad, Telangana (Remote)** : *Backend Python Developer* [Dec 2023 - Jan 2024]
  - Developed a **chess analysis platform** with **Python** and open-source engines (**Stockfish, Komodo**); deployed on **Docker**
  - Created an **audio translation tool** using **OpenAI's Whisper** for multilingual audio detection, translation, and transcription

PROJECTS

- **Dimension Measurement & Defect Detection System**:*(Prof. Sunil Jha, Prof. Arpan Gupta)* [Jul 2024 - Present]
  - Developed a **YOLOv8**-based **defect detection model**, achieving **92%** accuracy through hyperparameter tuning & data augmentation
  - Implemented **3D dimension measurement** system in **OpenCV**, reducing **error margins to 1mm** using advanced **contour analysis**
  - Integrated with **IoT** using **Raspberry Pi**, enhancing performance efficiency by **25%** and reducing manual monitoring time by **200%**
- **Dynamic Regional News Prioritization System:** [Feb 2024 - Present]
  - Developed a **news presenter** using **RAG** model for region-specific content, improving prompt generation by **20% at 95%** accuracy
  - Automated **web scraping and LLMs** to aggregate news from **50+** sources, increasing retrieval efficiency by **30%**
  - Generated **30+** text-annotated images and reels with **Python**, using **Meta API** for distribution, enhancing social media reach by **25%**
- **Dynamic Network Routing Optimization**: [Feb 2024 - Apr 2024]
  - Efficiently optimizing network traffic routing using **Dijkstra's** algorithm between routers with different connection costs
  - Determining the most efficient paths for network traffic by assigning costs to connections and iteratively updating the costs
  - Dynamic routing updates and visualization tools were incorporated to enhance the project's functionality and efficiency
- **_Inventory Backorder Forecasting System**: *(Prof. Minakshi Kumari)* [Nov 2023 - Dec 2023]
  - Engineered a **web app** for forecasting product backorder using **Random Forest, Decision Tree**, and **LightGBM** models
  - Utilized **sci-kit-learn** for model training **(1687861 samples)** and evaluation, integrating with **Django** for web deployment
  - Achieved an accuracy of **88% (Random Forest), 82% (Decision Tree), and 90% (LightGBM)** and an **MAE** of **2.5 units**
- **_Industrial Machinery Anomaly Detection:** *(Prof. Subodh V. Modak)* [May 2023 - Aug 2023]
  - Executed anomaly detection for industrial machinery using **MATLAB**, achieving **96%** accuracy with **One-class SVM** on **vibration data**
  - Developed **LSTM autoencoders** and implemented **Isolation Forest (94%)** and **Mahalanobis distance methods (70%)** accuracy
  - Optimized predictive maintenance by reducing **mean error from 1.68 to 0.09**, significantly enhancing early fault detection

TECHNICAL SKILLS

- **Programming languages** - C++, Python, Java, JavaScript, TypeScript, React, NextJs, HTML, CSS, SQL, R, LaTex
- **Softwares and utilities** - NodeJs, MongoDB, Arduino, Mysql, Docker, AWS, Git, Fusion 360, Matlab, Solidworks
- **Libraries and Cloud Services** - Pandas, NumPy, TensorFlow, PyTorch, Langchain, Scikit-learn, SciPy, Google Cloud Platform

POSITIONS OF RESPONSIBILITY

- **Hostel Captain, Football(M), BHM**: Lead the **Shivalik Hostel Team** in Inter hostel tournaments 23' [Jun'22 - May'23]
  - Led team of 16 in **General championship'23**, secured podium **third**; Started regular practices for better performance
  - Provided better pieces of equipment and facilities for the players maintaining the proper budget under the hostel funds
- **Representative Wellness Club**: actively participated in the events and coordinated all the operations [Oct'22 - May'23]
  - Drafted club communications, assisted with editorial work, and worked with Team Captain Rahul Bharti to organize his college talk
- **Publicity Activity head, Rendezvous'23**: managed and coordinated **advertisment** in **100+** colleges [Jun'23 - May'23]
- **Logistics Team head, Tryst'22**: handled lodging and amenities along with travel of **Guest Speakers** [Jul'22 - May'22]

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IIT COURSE

Degree	Institute	CGPA
B.Tech in Production & Industrial Engineering	Indian Institute of Technology Delhi	7.25

COURSES DONE

Electromagnetic Waves & Qua.mec., Intro. To Electrical Engg., Physics Laboratory, Intro. To Electrical Engg., Intro. To Computer Science, Calculus, Language & Writing Skill, Engg. Visualization & Comm., Introduction To Chemistry, Language & Writing Skill-2, Linear Algebra & Diffe. Equa., Engineering Mechanics, Thermal Sc. For Manufacturing, Introduction To Materials Science And Engineering, Solid Mechanics, Kinematics & Dy. Of Machines, Introduction To Psychology, Chemistry Laboratory, Metal Forming And Press Tools, Near Net Shape Manufacturing, Introduction To Statistics, Indian Fiction In English, Mechanical Engg. Drawing, Intro. To Biology For Engineer, Self-organizing Dynamical Systems, Metrology & Quality Assurance, Production Engineering Lab I, Design Of Machines, Stochastic Modelling & Simula., Intro To Operations Research, Control Theory & Applications, Micro And Nano Manufacturing, Production Engineering Lab- Ii, Cad & Finite Element Analysis, Industrial Engineering Lab - I, Manufacturing System Design

INTERNSHIPS

- Mechatronics Engineer, Mekuva Technologies Private Limited (2024)

POSITIONS OF RESPONSIBILITY

- Football - Captain, Shivalik, BHM (June, 2022 - May, 2023)
- Representative, Wellness, BRCA (June, 2022 - May, 2023)
- Activity Head, RDV'23, BRCA (June, 2022 - May, 2023)
- Tryst Teamhead, CAIC (July, 2021 - May, 2022)