HARSHIT KUMAR SINGH | 21MI10024

Indian Institute of Technology Kharagpur

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EDUCATION

Year	Degree/Exam	Institute	CGPA/Percentage
2025	B.Tech, Mining Engineering	Indian Institute of Technology Kharagpur	8.00
2020	Class XII, CBSE	Kendriya Vidyalaya Tatanagar	94.60%
2018	Class X, CBSE	Kendriya Vidyalaya Tatanagar	88.80%

INTERNSHIPS AND PROJECTS

Pythonic Version: Image Captioning　　　　　　　　　　　　　　　　　　　　　　Jun' 23 - Jul' 23
Supervisor: Mr. Dario Maschi | Washington University in St. Louis
• Successfully implemented pre-trained **ResNet-50 CNN** for feature extraction & utilized **LSTM-based RNN** for the Image caption generation
• Effectively leveraged **Flickr8k** dataset for model training & fine-tuning, employing the **CrossEntropyLoss** function & the Adam optimizer
• Achieved the development of a model capable of generating automated text descriptions for photographs, achieving an **87%** accuracy rate

Autonomous Horn for Autonomous Vehicle | Self Project　　　　　　　　　　　　　　May' 23 - Jul' 23
• Utilizing the ultralytics **YoloV8** model and **OpenCV** adeptly developed a real-time detection system for **80** distinct objects using a webcam
• Applied OpenCV **Histogram Oriented Gradient** (HOG) algorithm to accurately detect the real-time movement of individuals using a webcam
• Made different cases based on objects detected and the movement of objects, and successfully tested the horn effectively for different cases

Super-Pixel Segmentation | Kharagpur Data Analytics Group　　　　　　　　　　　　Aug' 22 - Sep' 22
• Implemented the **K-Means** clustering algorithm to group pixels of HD images with similar colours into a single cluster and compress the image
• Simulated a **super-pixel segmentation** using the K-means algorithm and enhanced program code with Scikit-Learn and the Numpy library
• Successfully attained a significant remarkable **38% reduction** in image size through the utilization of the super-pixel segmentation technique

System Reliability Using Monte Carlo Simulation and SVM | Kharagpur Data Analytics Group　　　Jun' 22 - Jul' 22
• Applied both the Monte Carlo approach & proposed an approach combining **Monte Carlo** & **SVM** to streamline the system reliability process
• **Proficiently transformed a complex** system performance model evaluation **(MCS)** into a more efficient and simpler calculation method
• Examined the algorithm for real-world application to compute the reliability analysis of a three-span continuous beam, & gained **93%** accuracy

SKILLS AND EXPERTISE

• **Programming Languages:** Python, SQL, C++, C, JavaScript, CSS, HTML
• **Frameworks and Libraries:** PyTorch, TensorFlow, NumPy, Pandas, Matplotlib, Scipy, Scikit-learn, Seaborn

COURSEWORK INFORMATION

• **IIT Kharagpur:** Programming and Data Structures (T/L) | Probability and Statistics | Advanced Calculus | Linear Algebra and Complex Analysis
• **MOOCs:** Machine Learning (Andrew Ng), Stanford University | Deep Learning Specialization, Stanford University | Mathematics for Machine Learning and Data Science, Deeplearning.AI | Prompt Engineering for ChatGPT, Vanderbilt University | Deep Learning, Neuromatch Academy

POSITIONS OF RESPONSIBILITY

Technical Coordinator Hardware | Prodex | Indian Institute of Technology Kharagpur　　　　Mar' 22 - Present
• Managed various activities at the society to improve Junior members' engagement in the society and their participation in various competitions
• Mentored and administered over **30 teams,** leading them to victory in competitions and conducting numerous technical workshops at IIT KGP
• Coordinated **2-day** workshops on the IoT for 1st & 2nd-year students of IIT Kharagpur, where we witnessed the participation of **500+** students

Subhead | Business Club | Indian Institute of Technology Kharagpur　　　　　　　　　Aug' 22 - Apr' 23
• Developed the **4th** International Edition of the Indian Case Challenges' webpage using **HTML, CSS,** & **JavaScript** pushing changes via **GIT**
• Organized and successfully executed the **11th** edition of **ICC 2023**, Asia's largest case study competition, reaching **5,000+** unique participants
• Conduct Knowledge sessions on '**Python for Data Science'** & '**Logistic Regression'** topics for enthusiastic Business Club Associate members

Student Member | Kharagpur Data Analytics Group | Indian Institute of Technology Kharagpur　　　Aug' 22 - Apr' 23
• Successfully organized the **3rd** edition of the Kharagpur Data Science Hackathon (KDSH) and achieved more than **3,500** unique participants
• As part of the growth team, we effectively managed various activities, such as securing sponsorship for KDSH and conducting workshops
• Efficiently arranged **Machine learning**, **Python**, & **Neural Art** workshops for 1st and 2nd-year IIT Kharagpur students, with **1300+** participants

AWARDS AND ACHIEVEMENTS

• Secured a rank among the top **1.4%** of students in **JEE Mains 2021**, an annual examination taken by more than **1 million** students every year
• Qualified for the **National Defence Academy** (NDA) written examination **4 times** consecutively and received calls from the **SSB 6 times**
• Secured an All India Rank of **2438** in Karnataka State **COMEDK UGET**, **2020**, an examination in which **0.15+ million** students appear annually
• Secured the **3rd position** in the **2022 Open IIT Product Design** competition at IIT Kharagpur, competing against more than **200** participant
• **Pre-finalists** in **TVS E.P.I.C 5.0** among **51,000+** participants, developed an ML model to assess the risk of granting loans without a credit score
• Achieved the **3rd Prize** in the **Industrial Design Problem**, **Great Step 2023**, conducted at the Department of Mining Engineering IIT Kharagpur

EXTRA CURRICULAR ACTIVITIES

• Remained part of scriptwriting team for the Nukkad Natak General Championship IIT Kharagpur 2023 (**3rd position**, Nehru Hall of Residence)
• Won **two gold** medals in football matches and a **bronze medal** in the 800-meter long run at the school level in Kendriya Vidyalaya Tatanagar
• Guided **20+ UG** freshers in acclimatizing to the institute's environment under the Buddy Interaction Program targeted at over **1900+** freshers