RISHIKA SINGH

Data Science and Machine Learning Enthusiast

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EXPERIENCE

Student Research Intern

Thapar University

August'2024 – Present

- Conduct advanced research for a reference paper on human pose estimation using state-of-the-art transformer models, specifically **ViTPose++** under head of department Dr. Mukesh Dalal.
- Developing a novel framework for human action recognition by integrating **Vision Transformers (ViT)** for pose estimation and **multi-year LSTM networks** for temporal modeling, addressing the challenges of **complex spatiotemporal dependencies** in action recognition tasks.
- The aim is to improve accessibility and usability in domains requiring **precise human position tracking**, contributing to advances in AI and computer vision.

Executive Member

OWASP-TIET

August'2024– Present

- Delivered engaging lectures and hands-on workshops on machine learning concepts, including supervised/unsupervised learning and neural networks, to a diverse audience of students.
- Collaborated with industry professionals to design hackathon challenges, ensuring that they were relevant to real-world machine learning problems.

HACKATHONS

Indian Space Research Organization Robotics Challenge

January'2025 – present

- Developing an autonomous navigation for an aerial vehicle (ANAV-drone) without any external navigation aid for marstian environment.
- Successfully qualified for the college and preliminary rounds, developing software for autonomous vehicles.

Flipkart Grid AI Challenge

August'2024 – October 2024

- Developed a Fruit Freshness Index System created which uses deep learning to assess the freshness of fruits through image analysis.
- Ranked amongst the top 80 teams qualifying to the semi-finals(top 0.4 percent out of 20,000 applicants).

PUBLICATIONS

International Conference on Expert Clouds and Applications

January 2025

- Published a journal on **Traffic Light Recognition for Autonomous Vehicles**. Trained and evaluated the models[yoloV8,V9,V10] on the LISA traffic light dataset, conducting a comparative analysis of accuracy, speed, and robustness.

PROJECTS

Railway Track Obstacle Detection using Synthetic Defect Image Generation

- Proposed a deep learning model for defect & obstacles detection in railway sector.
- Created synthetic defect images from real images & estimated risk of obstacle & applied deep learning models like U-net,Faster-RCNN,Resnet ,encoder-decoder.

GPS Denied Drone For Autonomous Navigation

- Designed and implemented an autonomous navigation system for an aerial vehicle (ANAV-drone) operating in GPS-denied environments.
- Integrated and calibrated multiple sensors (e.g., IMU, LiDAR, cameras) to enable precise navigation and environmental mapping in the absence of GPS.

EDUCATION

Thapar University

Bachelor's of technology (B-tech) | Computer Engineering

July 2023 – 2027 Patiala,India

- CGPA: 8.54/10.00

TECHNICAL SKILLS

Python | SQL | Pixhawk | Pandas | Matlab | Machine Learning | Deep Learning | R | Data Visualization | Raspberry Pie

ACHIEVEMENTS

- 6 consecutive years academic scholar in high school **(Delhi Public School Greater Noida)**.
- Reached Semi-Final between 80 competitors out of 20k+ participants in **Flipkart Grid AI Challenge**.
- Qualified first round of AI hackathon **HACKOFIESTA IIIT Lucknow**.
- Qualified amongst top 178 teams of India for the second round of **Indian Space Research Organization Robotics Challenge**.

COURSEWORK

- Computer vision
- Machine learning from Andrew Ng course
- Data analytics by IIT PATNA
- Database and Management systems

PROJECTS