RATAN PRAKASH MISHRA

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EDUCATION

B.TECH (Electronics and Communication Engineering)	2021-2025	Delhi Technological University, New Delhi	7.17 CGPA
CBSE (Class XII)	2020	Army Public School, Dhaulakuan	96 %
CBSE (Class X)	2018	Army Public School, RK Puram, Secunderabad	94 %

INTERNSHIPS

Research Intern @ IIT Jodhpur, iHub Drishti Foundation (TIH) *(June 2023 - August 2023)*

- Learnt and Engineered deep reinforcement learning for mobile manipulator robotic arm, integrating sequential learning that is learning tasks by the model one-by-one in offline learning settings and also implemented it on the hardware.
- Implemented DQN (Deep Q Networks) learning on inverted pendulum and a custom made environment.
- Acquired hands-on experience and learning in basic 3D modeling and animation in Blender on the side.

Artificial Intelligence Intern @ MLx - LLM Intern *(May 2023 - June 2023)*

- Worked with LangChain, an open source framework for building enhanced applications on top of Large Language Models (LLMs) of OpenAI. Built custom tools and agents to give additional features to an LLM.
- Developed multiple Colab notebooks for demonstrating and explaining concepts of LLM (Large Language Models), Langchain, agents, and tools. Created explanatory videos to elucidate the same.

PROJECTS

Hand Gestures and Voice Controlled Drone (UAVs) - AI/ML | Python, tensorflow | LINK

- Controlled DJI Tello via hand gestures using Computer Vision and Neural Networks
- Employed libraries and frameworks like mediapipe, OpenCV, and tensorflow for implementation
- Integrated a pre trained voice model for UAV control through voice commands
- Also demonstrated simulated execution on an Arducopter in gazebo, employing MAVlink protocol

AI Interviewer Chatbot - AI/ML |Python, LLM (Prompt Engineering), OpenAI, GPT-3.5 | LINK *(Feb 2024 - Present)*

- Developed an AI-powered interviewer using GPT-3.5-turbo for real-time question-answer and feedback.
- Implemented speech recognition and text-to-speech models for a realistic verbal interview experience.
- Optimized API calls for cost efficiency, making it a low-cost solution for both candidates and hiring platforms.
- Designed to mimic real interviewers, providing valuable practice for candidates and serving as a tool for actual interviews conducted by corporations.

Self Driving Car Project — *(Formula Student Team) Robotics+DL* |ROS, Python, Arduino, tensorflow, C++| LINK *(Jan 2022 - Present)*

- Constructed a Computer Vision pipeline for precise traffic cone detection, localization, and classification. Improved accuracy via augmentation and transfer learning across 3 categories.
- Contributed to the development of vehicle control and actuation systems, successfully integrating PID control algorithms with real-time feedback from a Hall effect sensor for vehicle speed and a linear potentiometer for steering angle.
- Designed dashboard UI and data acquisition system, featuring real-time vehicle state data via CAN bus and other pipelines.

TECHNICAL SKILLS

- **Machine Learning, Deep Learning, Reinforcement Learning, Robotics, Prompt Engineering**
- **Languages:** Python, C++, Arduino, MATLAB, Bash, VHDL, SQL
- **Frameworks:** TensorFlow, Keras, LangChain, DroneKit, SITL, Ardupilot, PX4, ROS
- **Libraries and tools:** OpenCV, pandas, SciKit-learn, NumPy, Matplotlib, Git, NLP, CNN, RNN, LLMs
- **Platforms:** Linux, Arduino, Raspberry Pi, PixHawk, Gazebo, Macintosh, Jetson Nano

POSITIONS OF RESPONSIBILITY

AI/ML Head @ AIMS-DTU *(Artificial Intelligence and Machine Learning Society of DTU)***:**

- Mentored a cohort of 50+ students in comprehending concepts related to Machine Learning and Deep Learning, facilitating their active engagement in various competitions and projects.

Autonomous Head @ Team Defianz Racing *(Formula Student team of DTU)***:**

- Recruited, trained and led 10+ students in the autonomous department focusing on integration of robotics and deep learning principles for implementation on a self-driving car initiative.

ACADEMIC ACHIEVEMENTS AND AWARDS

- School topper in PCM stream and “Computer Science” subject topper in class 12th Boards.
- Cleared NDA exam in 2020 September Attempt and also attended SSB (5 days selection interview)

EXTRA-CURRICULAR ACTIVITIES AND ACHIEVEMENTS

- Robotics and AI Engineer of Team Defianz Racing team for College & participated in Formula Student Italy, Czech and Formula Student Bharat Competitions.