Mohit Yadav

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Education

University of Minnesota Twin Cities **Sept 2023 – May 2025 (Expected)**
Master of Science in Robotics (CGPA : 4.0/4.0) Twin Cities, MN
Coursework : Intelligent Robotic Systems | Computer Vision | Artificial Intelligence | Machine Learning

Indian Institute of Technology (Banaras Hindu University) Varanasi **July 2014 – May 2018**
Bachelor of Technology in Mechanical Engineering (CGPA : 7.2/10) Varanasi, India

Academic Projects

Real-time Human Pose Imitation on Baxter Robot.[Video] **UMN, Twin Cities**
- Utilized BlazePose for 3D human pose extraction, which was used to calculate essential joint angles to translate the pose on Baxter Robot in KinEval(a ROS-like middleware system) simulation environment.
- Established real-time communication via Flask between Python script and KinEval. Implemented proportional controls in KinEval to allow smooth replication of human poses on Simulated Baxter Robot.

Scene Graph Generation for an image using graph neural networks. **UMN, Twin Cities**
- Implementing a graph neural network for generating a scene grasp on image data extracted from the PyBullet environment to get a semantic understanding of the scene. Which is used to perform decluttering of a table using a Kuka robot arm.

Artificial Intelligence agent to play game of Ultimate-Tic-Tac-Toe.[Code] **UMN, Twin Cities**
- Developed a playable version of Ultimate Tic-Tac-Toe in Python, including logic for game flow, board representation, and win conditions.
- Created a challenging AI opponent using the minimax algorithm with alpha-beta pruning for intelligent decision making.

Development and testing of algorithms for minimal cut set generation. **AERB, Mumbai**
- Developed MOCUS algorithm in Python for event tree analysis of nuclear power plant components.
- Tested the algorithm on various components of a nuclear power plant to determine the risk associated with the failure of a component as a part of Probabilistic Safety Analysis done by Atomic Energy Regulatory Board.

Experience

Teaching Assistant : Data Analytics for Finance | Carlson School of Management, UMN **Jan 2024 – May 2024**
- Guided students in class for implementing concepts of financial data analytics in Python. Taught essential libraries including pandas, numpy, and optimization library CVXPY. Facilitated understanding of optimization techniques to solve financial problems.

Teaching Assistant : Dynamics | Aerospace Engineering and Mechanics Department, UMN **Jan 2024 – May 2024**
- Organized discussion sessions in a lecture-style format to offer solutions for quiz problems. Assisted students with MATLAB code for implementing concepts related to vectors, tensors, kinematics, as well as Euler and Lagrangian approaches to particle and rigid body dynamics.

Scientific Officer | Nuclear Power Corporation of India Limited **Nov 2021 – Aug 2023**
- Implemented end-to-end Matlab pipeline for performing Probabilistic and Deterministic Safety Hazard Analysis to determining the design basis ground parameters of different NPP sites. Implemented mathematical models for every part of the process, from determination of source characteristics of lineaments in the area of concern to generation of design basis ground response spectra.
- Used a site-specific custom soil profile randomization using site-specific data and Latin hypercube sampling to model property variation.

Trainee Scientific Officer | Bhabha Atomic Research Center **Jan 2021 – Oct 2021**
- Engaged in an interdisciplinary training program that covered computational techniques and their applications in engineering, including topics such as FEA, CFD, and reliability engineering.
- Selected as one of the 16 students nationwide for a prestigious 10-month training program following a highly competitive technical interview. Recognized as one of the top three performing candidates upon completing the program.

Engineer | Tata Motors Limited **Aug 2018 – Jan 2020**
- Optimized data consolidation workflows from TML dealerships by developing an automated system in Python, which helped enhance the efficiency of sales team.

Technical Skills

Certifications : Algorithms[Cert][Code], Data Structures[Cert][Code], Machine Learning[Cert] , Deep Learning[Cert]
Programming Languages : Python, Javascript, C/C++
Frameworks : PyTorch, PyBullet, Numpy, Pandas, Sklearn, CVXPY, Scipy, Matplotlib.
Tools : Git/Github, Google Collab, Visual Studio Code, Jupyter Notebook, ProgeCAD, LaTeX

Awards / Extracurricular

- Recipient of Prestigious Merit-Cum-Means scholarship from IIT (BHU), Varanasi.
- Recipient of Honourable Mention from IIT (BHU) Varanasi for contribution to the sport of Volleyball.[Cert]