Ajitesh Shree

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Education

Year	Degree	Institution	Score
2025	B.Tech, CHE	Indian Institute of Technology Kanpur	7.0/10.0
2021	CBSE – XII	Loyola High School, Patna	96.2%
2019	CBSE – X	Loyola High School, Patna	96.8%

Work Experience

Machine Learning Intern — Under Dr. Bapi Chatterjee, Dr. N. Arul Murugan & Dr. Mousumi Samanta
`Self-Assembling-Peptide` — *May - June 2023, 2024*

- Designed a Reinforcement Learning based Human-Feedback algorithm for discovering self-assembling peptides
- Worked on Monte Carlo Tree Search algorithm for self-assembling peptides study based on the paper "Machine learning overcomes human bias in the discovery of self-assembling peptides"
- Developed a customized multi-discrete environment by leveraging OpenAI's gym library, utilizing the Env module
- Built a Reinforcement Learning Model using Proximal Policy Optimization module from stablebaselines3 library
- Enhanced the model, using hydrophobicity as an evaluation factor, demonstrating the utility of the model

Key Projects

Intrinsic Curiosity — Course Project CS780
Intrinsic-Curiosity — *January 2024 - April 2024*

- Implemented various Reinforcement Learning algorithms, including PPO, DQN, TD & Monte Carlo Control, etc
- Studied Intrinsic Curiosity Module (ICM) and its application with Asynchronous Advantage Actor Critic (A3C)
- Used PPO, DQN, and A3C, with ICM integration on various environments, showing PPO with ICM works best
- Showed that combining ICM with primary algorithms boosts average rewards in sparse reward environments

Streaming Data Visualization — Course Project CS677A
Streaming-Data-Visualization — *September 2023 - November 2023*

- Applied TCP/IP socket programming for smooth data streaming between servers in a network
- Employed the VTK library to visualize data dynamically across numerous time steps, analysis capabilities
- Established that single-socket approach has better transmission & visualization time for data over multiple-sockets
- Achieved a decrease of 79.81% overall time for a 128-square grid data carried across 30 timesteps

Classify Meister — Stamatics Society Summer Project
Classify-Meister — *May 2023 - July 2023*

- Implemented classification algorithms such as Logistic Regression, SVM, and KNN on the Titanic survivors dataset
- Attained accuracies of 0.935, 0.957, and 0.945, on the respective models in the case of binary classification
- Explored Naive Bayes, Decision Trees, Random Forest & Ensemble learning for binary and multi-class classification
- Submitted a report on the novelty of Random Forest algorithm implementation on the loan-default dataset

Computational Neuroscience — Brain & Cognitive Society Summer Project
BCS-Comp-Neuro — *May 2022 - August 2022*

- Explored Python libraries Numpy, Pandas, Scikit-learn, and Keras for Machine Learning model development
- Acquired knowledge in neuroscience fundamentals, including neural encoding and decoding, spike and firing trains
- Learned about different models of the brain specifically, descriptive, mechanistic, and interpretive
- Utilized Weber's law, Fechner's law and Poisson distribution to quantify the perception of change in stimuli

Relevant Courses

Deep Reinforcement Learning	Introduction to Machine Learning	Large Data Analysis & Visualization
Computational Methods in Engineering	Fundamentals of Computing	Galaxies & Observational Cosmology
Introduction to Manmade Satellite System	Linear Algebra & ODEs	Functional Programming

Skills

Programming: C, C++, Python, MATLAB, LaTeX, Haskell
Tools: Scikit-learn, Jupyter, Matplotlib, Pandas, Numpy, Keras, Tensorflow, OpenCV, PyTorch, Gymnasium

Extra Curricular

- Participated in a Hackathon at Opportunity Open Source Conference at IIT Kanpur — *2024*
- Volunteered at Student Placement Office, IIT Kanpur, for the Placement Drive — *2022*