Astarag Mohapatra

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Education

Indiana University at Bloomington   **Aug 2022 -Present**
Master in Data Science   *GPA:*

National Institute of Technology, Rourkela   **Jun 2017 – Aug 2021**
B.Tech in Mechanical Engineering (Major)   *CGPA: 8.22/10.0*
B.Tech in Electronics and Communication Engineering (Minor)   *CGPA: 7.94/10.0*

Technical Skills

Programming: Python, PyTorch, sklearn, Tensorflow, R programming, HTML/CSS, Selenium, JAX, OpenCV, JavaScript, PostgreSQL
Developer Tools: Kubernetes, Ray, Weights & Biases, Docker, Google Cloud Platform, Jupyter, GitHub
Operating Systems: Linux, Windows, Mac OS

Experience

Columbia University, New York   **Aug 2022 – Present**
Remote Research Assistant for FinRL and FinRL-Meta Open Source Project Lab   *Part-time*

- Contributed *blog posts*, *paper explanations*, trading demos and bug fixes for the FinRL library. First responder in the GitHub issue section.
- Leading the development on Hyperparameter optimization using *Ray tune*, *Optuna* and *Weights & Biases*, explainability and interpretability of DRL algorithms in the financial world

Salesken, Bengaluru, India   **Dec 2021 - Apr 2022**
Machine learning and Reinforcement learning Intern   *Internship*

- Integrated end-to-end hyperparameter optimization pipeline using the ***Population based algorithms*** and **Ray library** resulting in an average 7% increase in accuracy for the automated sales agent model.
- Developed *politeness language classification model* using the hugging face library and transformer models resulting in 16% increase in F1-score compared existing organization language models
- Build microservices using Docker, Kubernetes and GCP Platform. Reduced the ready-to-release time from 2 hours to 45 mins through automation in the production pipeline .

University of Liège, Belgium   **Jun 2021 – Dec 2021**
Visiting Reinforcement Learning Research Intern   *Remote Internship*

- Developed a deep reinforcement learning trading agent in collaboration with Prof. Damien Ernst using Optuna and Stable Baselines3, resulting in 60% increase in Sharpe Ratio compared to the Industrial average benchmark
- Analyzed the integration of Google trends as a proxy for market sentiment analysis and improved the Sharpe ratio by 13% for volatile assets in Crypto-trading compared to the baselines.

Publications

ASME Journal of Solar Energy Engineering

- **Title**: *Design and Performance Analyses of Evacuated U-Tube Solar Collector Using Data-Driven Machine Learning Models*. Application of various Machine learning tools to optimize the performance of heating devices for sustainable development. GitHub Project link.

Projects

Anomaly Detection in Baldwin Pump | *PyTorch, Time-Series*

- Developed a custom Encoder-Decoder model for Anomaly detection pipeline in a time-series Baldwin Pump, achieved 0.91 F1 score with a False Negative of 0.2
- The efficacy of the model surpassed other 15 models in the competition organized by STESL, NIT Rourkela

Certification

- Deep Learning Specialization DeepLearning.AI, Coursera
- Reinforcement learning Specialization University of Alberta, Coursera
- DeepLearning.AI TensorFlow Developer, Coursera
- MLOPs Specialization DeepLearning.AI, Coursera
- Database Design and Basic SQL in PostgreSQL
- Python for data science and Machine learning Bootcamp, Udemy
- Mathematics for Machine Learning: Linear Algebra
- Algorithmic trading and Quantitative Analysis Using Python, Udemy