विद्याधनं सर्वधन प्रधानम्
IIT JAMMU

Pulkit Mahajan

B.Tech - Computer Science and Engineering
Indian Institute of Technology, Jammu

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Github | Portfolio | LinkedIn

Education

Degree/Certificate	Institute/Board	CGPA	Graduation
B.Tech	Indian Institute of Technology, Jammu	9.46	May. 2023

Experience

- **Quantitative Developer, Analyst** *Jun. 2024 - Present*
  Nomura Mumbai
  – Leveraged advanced machine learning techniques, including XGBoost, Random Forests, and genetic programming, to create robust predictive models and hedged alphas. Spearheaded algorithm optimization for trading strategies.
  – Developed end-to-end solutions for aggregating tick-level financial data into 5-minute intervals, enabling efficient feature extraction for higher-level quantitative research.
  – Optimized Daily ETL Pipelines, reducing runtime by 80% by building a custom distributed computing framework suited to the project requirements.
  – Passionate about applying technical knowledge to solve complex problems; seeking opportunities to deepen expertise in quantitative analysis and data science in a rigorous academic setting.
- **Systems Analyst, Manager** *Jul. 2023 - Jun. 2023*
  HDFC Bank Mumbai
  – Develop and optimize SQL procedures to handle high-volume transactions data for Automated Account Mgmt. System.
  – Design and implement efficient ETL pipelines to facilitate extraction of key features and metrics for performance analysis and other actionable insights.
  – Develop and integrate API modules as necessary to enhance the functionality of the Account Management System.
  – Enable real-time monitoring and reporting capabilities, providing valuable insights into trends and exceptions.
- **Data Science & Data Engineering** *Oct. 2022 - Jan. 2023*
  Merapashu360 Gurugram
  – Developed 7 automated and 2 ad hoc run scripts for data engineering. Leveraged a variety of techniques to efficiently scrape data from public resources and open APIs, ensuring data integrity and security via dynamic API routing, preventing server throttling and maintaining anonymity throughout the scraping processes.
  – Orchestrated end-to-end ETL pipelines, synchronizing data between a Linux VM and Google Cloud Storage, facilitating efficient accessibility to BigQuery.
  – Designed a robust monitoring system overseeing deployed ETL pipelines. Implemented proactive measures, to ensure seamless data transfers, resulting in ∼15% improvement in error detection, intimation, and remediation.
  – Business Impact: Enabling Operations team with up to date data on market and competitors enabling optimal decision making on material procurement and cost optimization. Incremented top of the funnel 20-folds, by making available, relevant information on potential target customers.
- **Quantitative Research Intern** *Jul. 2022 - Aug. 2022*
  WorldQuant Mumbai(Remote)
  – Devised and implemented a robust anomaly detection framework to monitor monthly data files from vendors, reducing false positives by 20% and enhancing anomaly detection accuracy by 15%.
  – Conducted in-depth inspections at both file and company levels, employing advanced statistical methods and matrix profiles to identify anomalies with a precision rate of 95%

Research & Projects

- **NTIRE - Stereo Image Super Resolution** *[Paper]*
  Jan. 2023 - Jul. 2024 B.Tech Project, Dr. Vinit Jakhetiya
  – Trained NAFSSR model on processed DIV2K data set for stereo Image super-resolution. Enhanced the model's ability to capture sharper edges and finer textures using perceptual loss and texture loss.
  – Experimented with further Models including Image2Image Translation Loss, and a No-Reference Quality Assessment Loss function - KLTSRQ A, implemented from scratch, for seamless use with PyTorch-based models.
  – Achieved Global Rank 7, with an SSIM of 0.7268 and PSNR of 24.0696.
- **Vitals Extraction** *[Project]*
  Jan. 2023-Feb.2023 Inter IIT Tech Meet - 2023, IIT Kanpur
  – Developed a novel technique combining YOLOv7 and U-Net to extract vital signs from images of vital monitors.
  – Digitized the HR graph and applied OCR with custom filters to remove gibberish, achieving an accuracy of 92%.
- **Bayesian Neural Networks** *[GitHub]*
  Jun. 2021 - Jan. 2022 Dr. Rohitash Chandra, University of New South Wales
  – Collaborated on a Bayesian Neural Networks project, implementing LSTM and RNN techniques with a proposed Sampling method, achieving comparable results on benchmark datasets.
  – Programmed Single Chained and Multiple Chain models, conducting comprehensive result evaluations using visualizations and data analysis tools. Conducted a thorough comparison of different model and optimizer combinations.

Skills

- **Programming Languages**: Python3, C/C++, Java
- **Technical Skills** : Deep Learning, Computer Vision, Sequence Models, Back-end Development
- **Frameworks and Tools** : SQL, PySpark, Keras, Tensorflow, Pytorch, OpenCV, Quarkus, Django, Spring Boot, Git/Github

Achievements and Recognition

- **Academic** : Consistently ranked among the top performers, securing the **2nd** highest CGPA in batch.
- **JEE** : Secured **AIR 5180**, JEE Advanced 2019, and **3747**, JEE Mains 2019.
- **Scholarships** : Awarded with **KVPY (2018-19)** and **NTSE(2016-17)** Fellowships by Govt. of India
- **Workshops** : Conducted several workshops like Version Control Systems, Programming in C++ & Fundamentals of Reinforcement Learning.