Surya Prakash Mishra

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Website | Github | LinkedIn

Education

Indian Institute of Technology (Indian School of Mines) Dhanbad — Dhanbad, India
Bachelor of Technology in Mineral and Metallurgy Engineering (CGPA: 7.6) — *May'23*

DAV Public School, Chandrasekharpur — Bhubaneshwar, India
Senior Secondary (Percentage - 88.0) — *May'18*

Experience

Data Scientist — Jul 2023 – Present
Axis Bank (Business Intelligence Unit) — *Mumbai, India*

- Developed pricing optimization algorithms for Fixed Deposit and remittance products using regression analysis and time-series forecasting, resulting in 17% increase in FD inflows and improved profit margins..
- Developed advanced financial propensity models using PySpark ML and gradient boosting techniques to predict customer investment behavior, improving conversion rates from 13% to 14.2%.
- Created automated CRM nudging system by leveraging propensity scores for strategic timing of investment product offers, enhancing sales team efficiency and regulatory compliance.
- Designed and deployed Kafka pipelines for real-time notifications, integrating with Data Lake infrastructure.
- Optimized and automated resource to customer mapping for a better CLV and portfolio optmization
- Deployed autoregressive models to predict segment wise deposits in the bank with 92% accuracy

Summer Associate — May 2023 – Jul 2023
Varaha — *Remote*

- Created a lightweight segmentation model achieving 93% accuracy for char volume estimation.
- Streamlined deployment using a CI/CD pipeline in TFX for real-time monitoring.

Applied Scientist Intern — Mar 2023 – May 2023
Amazon Alexa — *Bengaluru, India*

- Designed a memory-efficient multilingual tokenizer for offline speech recognition applications.
- Utilized Amazon SageMaker Studio along with AWS Lambda, DynamoDB, S3 and Elastic Container Registry for efficient model training, storage, and deployment.

NLP Engineer — May 2021 – Jul 2021
Quantum AI Systems — *Remote*

- Finetuned a BERT model to develop a chatbot for fintech, integrated with Elasticsearch for efficiency.
- Optimized deployment via Flask, reducing system response latency by 20%.

Research Intern — Feb 2021 – Apr 2021
Indian Institute of Science Education and Research — *Pune, India*

- Utilized Sentinel Satellite Data for mineral exploration under the guidance of Dr. Sudipta Sarkar.

Publications

A comparative study and development of a novel deep learning architecture for accelerated identification of microstructure in materials science

- Developed a CNN-based model for classifying SEM microstructures with improved accuracy.
- Benchmarked performance of various CNN architectures for microstructure analysis.

A computer vision-based approach for identification of non-metallic inclusions in the steel industry

- Created a model to map elemental compositions in inclusion defects of steel microstructures.
- Demonstrated superior performance of transformers over CNNs for this task.

Development of a neural network to generate synthetic additive manufactured microstructure under various conditions

- Implemented a diffusion-inspired model to generate synthetic microstructures.
- Produced high-fidelity images conditioned on specified manufacturing parameters.

Projects

Avsaadan | *TensorFlow, OpenCV* Nov'22 - Feb'23
- Collaborated with MCL to develop drones for monitoring and optimization of mine blasting.
- Deployed a 4-bit VQ-VAE on NVIDIA Jetson, enabling faster video processing and transmission.
- Built models to monitor water and sediment flow for post-blasting analysis and optimization.

Drivison | *Depth Camera, Object Recognition* May'21
- Designed a depth-camera-based system to detect oncoming traffic and reduce overtaking risks.
- Integrated LED warning indicators to alert vehicles behind trucks of oncoming traffic.
- Improved road safety by providing real-time visual cues for overtaking decisions.
- Achieved finalist position in OpenCV AI Competition-21.

FireNet | *TensorFlow, OpenCV, Flask* Feb'21
- Developed a deep learning model for real-time fire detection and severity assessment.
- Utilized OpenCV tools to quantify fire intensity and evaluate risk.
- Applied the Bellman-Ford algorithm to generate optimized escape routes.
- Deployed the solution as a web application using Flask.

Lost-n-Found | *NLTK, Transformer* Dec'20
- Created a web platform for registering and reclaiming lost items via NLP-based matching.
- Implemented NLTK models to find similar items in the database from user queries.
- Validated user claims through a BERT-based question-answering system.

Smart Warehouse Management | *Demand Prediction, Blockchain, Flask* Mar'20
- Forecasted demand using an ensemble of Holt-Winters method and Prophet.
- Incorporated blockchain for secure tracking of food supply chains.
- Developed a communication platform with Firebase for real-time updates.
- Deployed the solution as a web application using Flask.

Technical Skills

Languages: Python, C/C++, SQL
Frameworks: Tensorflow, Keras, Transformers, PySpark, OpenCV, Scikit Image, Flask, FastAPI, Pytorch, XGBoost, JAX, TFX
Developer Tools: Linux, AWS, Git, Visual Studio, Jupyter Notebook

Related Coursework

Deep Learning Specialization: The complete basics of deep learning course provided by DeepLearning.ai
Probabilistic Deep Learning: In depth knowledge about probability and statistics in Machine Learning
Machine Learning Operations: Industrial MLOps using AWS Stack
Advanced Tensorflow Specialization: Complete mastery in Tensorflow
CSD509: In-depth course exploring digital signal processing concepts and algorithms.
CSO304 : Basics of image and video processing.
CSO309 : Basics of AI algorithms including fuzzy and hueristic search algorithms.

Position of Responsibility

President of RoboISM, the robotics and AI club of the Indian Institute of Technology, Dhanbad.
Coordinator of Takshak the annual robotics fest of IIT(ISM), Dhanbad.
Anchored the inaugural ceremony of Srijan'20, the socio-cultural fest of IIT(ISM), Dhanbad.

Achievements

All time highest rank of 22 worldwide in terms of commits in Keras
Runners Up in Samsung Innovation Hackathon 2022.
Winner in FallFest 2021.
2nd Runners Up nationwide in Honda Hackathon, 2020.
Runners Up in Parliamentry debate competition, 2019.
AIR-103 in NISER entrance exam, 2019.