Ramesh Oswal

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Objective – Seeking Software Engineering roles with focus on applied machine learning.

Industry Experience

Motion Planning Engineeer **Aurora Technologies(AUR)** **Dec'24-Current**

- Spearheading the Motion Planning team to scale training and data versioning processes, ensuring readiness for the commercial launch of Aurora Driver v1.
- Designing an end-to-end trajectory ranker and scene forecaster, enhancing the accuracy and efficiency of the motion planning system.
- **Tools Used - Kubeflow, MLFLow, Pytorch.**

Lead ML Engineer - MLOps **Luminar Technologies(LAZR)** **Mar'23- Dec'24**

- Led the development of ML platform for Luminar as 1st MLOps hire. Built the team with 2 MLOps and DevOps hire in 1yr.
- Built the Onprem 15 node distributed training platform for training Foundation CV Models over 100s of GPU like RTX 5000, RTX 8000 and L40s.
- Developed a Full ML LifeCycle automated pipeline encompassing data processing of TBs of ROSBag data into Kitti format feeding into multi node DDP model training using PyTorch and conversion to TensorRT model & deployment on JetsonOrin.
- Pioneered critical integrations including Kubeflow TrainingOperator, Multinode DDP, and Model and Data Management through Wandb and MLFlow, traceability, validation pipelines.
- Engineered an active learning pipeline for intelligent selection of frames/images, optimizing labeling expenditure and saving thousands of dollars.
- **Tools Used - Kubeflow, Wandb, MLFLow, Pytorch DDP, Argoworkflow, Kubernetes.**

Lead Research Engineer Applied Science **Amobee(Acquired Nexen - NEXN)** **Nov'20-Mar'23**

- Managed a team of 4 engineers in building Machine Learning as a Service(MLaaS) a one stop solution for ML@Amobee.
- Defined the vision, scope, design of MLaaS and implemented the core components: Training(cpu & gpu), Inference(Realtime & batch), Tracking Model Performance, REST/gRPC, Training and Inference Vizualization, MLaaS-CLI, Lambda Models etc.
- Optimized Deep Learning ranking model inference from 28ms to 0.5ms using techniques like TensorRT, Multiprocessing, caching, tf.function to deploy a PoC of MLaaS Inference on AdServers(receiving 1million request/sec). Achieved 52% F1 score improvement with latency(p95=18ms) and throughput(1mil req/sec) as legacy system.
- Designed and implemented a solution to transition from simulation to ML-based forecaster(Spend, Impressions, Users). Resulted in latency improvement of 75% and removal of 30 nodes(each 50-80cores and 300gb) reducing cost. Built the results dashboard using airflow and kibana to visualize performance(R2 and MSE) of models on a daily basis.
- Presented design, analysis and results across Amobee to executives, Internal customers, PM and Architects on a regular basis.
- **Tools Used - Spark, Keras, Scala, Airflow, Mlflow, Kubernetes, AWS, TensorRT, Kibana, Python**

Machine Learning Engineer **Noble.AI** **June'18 – Nov'20**

- Led the On-Platform ML Model Training development which resulted in 10x speed-up to ship Deep Learning models to production, resulting in removal of Human in Loop.
- First ML Engineer at Noble and helped grow the company from 4 to 15 while simultaneously working on different aspects of product development ranging from machine learning, backend services and infrastructure.
- Led my team through successful events such as product demos to customers & investors, fundraising events.
- Won Noble Q3 2019 award for leading the effort to ship the first version of Reactor and delighting a Fortune 10 customer.
- **Tools Used: Django, Celery, Keras, Tensorflow, MLFlow, Sklearn, AWS ECS, Terraform, Docker, Redis**

Data Science Intern **Walmart Labs** **June'17 – Aug'17**

- Developed an ML model to predict the click through rate (CTR) to rank relevant product ads for Walmart.com.
- Developed a weighted training pipeline for >100M training dataset resulting in 6x training speedup and 10% increase in revenue.
- Deployed models into production to run A/B experiments & validated model performance for comparing the online and offline metrics - NLL, PR & ROC AUC and CTR.
- **Tools Used – Python, Spark, Hive, Cassandra**

Business Operations Associate **ZS Associates Inc.** **Sept'14 – June'16**

- Worked on US healthcare data of 15M practitioners creating master dataset by converging information from multiple sources.
- Automated processes like loading client data, quality checking client deliverables and performed ad-hoc analysis, reducing response time of file processing by over 80%.
- **Tools Used – Python, MS Excel, VBA and Informatica Siperian, PL/SQL**

Project Intern **G.S Lab** **July '13 – June '14**

- Enhanced software load-balancer for OpenFlow compliant SDN architecture to distribute traffic based on server capacity by adding generic flows. R. Oswal et. al. "A Survey of Past, Present and Future of Software Defined Networking"

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Software Developer Intern **Softkoash Solutions Pvt. Ltd** **May '12 – July '12**

- Implemented backend modules for customer login, inventory management for an ERP project.

Selective Academic Projects

Automatic Speech Recognition (Prof. Bhiksha Raj, CMU) **Jan'18 – May'18**

- Used the WSJ labeled dataset at frame and phoneme level to transcribe unlabeled speech signals and built an end-to-end ASR system using Listen-Attend-Spell Architecture and achieved Levenshtein distance of 10.51.

Automatic Detection of Eye Diseases using OCT Scans, (CMU, Tecumseh Vision , LLC) **Aug'17-May'18**

- [US Patent Pending] System and Method for Automatic Assessment of Disease Condition using OCT Scan Data

Education

- **Master of Science - Language Technologies Institute (SCS),** Carnegie Mellon University, PA **Aug'16 - May'18**
- **Bachelors in Computer Engineering,** University of Pune, IN. **Aug'10 - May'14**

Awards & Recognition

Won Noble Q3, 2019 Award.
Won Quest '15 (Hackathon at ZS Associates India)
Best Project - PICT's "Impetus & Concepts'14
Runner-up MITCOE TechFest - 'Network Raptors'
Best Project in Ops Excellence (ZS Global Offices)