PRABHAKAR SIVANESAN

Senior Data and AI Engineer

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PROFESSIONAL SUMMARY:

Results-driven Data Engineering professional with over 9+ years of Data and AI experience, with 3 years of dedicated experience in building robust data pipelines and infrastructure, complemented by 6 years in Computer Vision.. Proven expertise in designing, developing, and deploying data solutions to support complex AI/ML initiatives. Proficient in Python, cloud platforms (GCP), and various databases, consistently optimizing data flow and ensuring data quality for scalable systems.

TECHNICAL EXPERTISE:

- Programming Languages: Python, Java
- Data Analysis & Manipulation: Pandas, Polars, NumPy
- Data Orchestration & Processing: Apache Airflow, Apache NiFi, Apache Spark, Apache Beam
- **Cloud Platforms & Services:** Google Cloud Platform (GCP Cloud Run, Cloud Functions, Pub/Sub, Cloud Storage, Cloud Composer, Dataproc, Dataflow, GKE, AlloyDB, Vertex AI)
- Databases / Warehouse: AlloyDB, PostgreSQL, BigQuery, MySQL, MongoDB
- Infrastructure as Code: Terraform, Git
- Machine Learning Frameworks: TensorFlow, PyTorch, Intel OpenVino, TensorRT, OpenCV
- Containerization: Docker, Kubernetes

PROFESSIONAL EXPERIENCE

Tata Consultancy Services - Domain and Technology - Toronto, Canada

Senior Data Engineer: Xvantage - Ingram Micro

Nov, 2022 - Present

- Led a team of 15 Data Engineers and Data Analysts in the design and creation of data lake solutions and robust data pipelines, directly powering **Ingram Micro's Xvantage platform**.
- Designed a core data pipeline for vendor catalog information, ensuring seamless data transfer to 8+ downstream systems and shrinking data ingestion time from several hours to under 30 secs.
- Engineered a low-latency streaming data pipeline in the GCP data lake using Cloud Run, Pub/Sub, and GKE, enabling sub-second throughput to multiple consumer systems and greater data consistency and reducing overall message volume to downstream systems by 80%.
- Enforced robust pipeline monitoring and alerting using **Cloud Logging and Datadog** to ensure operational stability and proactive issue resolution.
- Implemented **Terraform-based Infrastructure as Code (IaC)** pipelines for automated and seamless deployments, enhancing operational efficiency. Reduced deployment overhead by 30%.
- Utilized full-text search capabilities on AlloyDB, optimizing queries and reducing latency by 30% while achieving \$72K USD in annual cost savings.
- Implemented vector-based search for product discovery using LLM text embedding, which significantly enhanced search relevance over traditional methods and boosted click-through rates by 5%.

Tata Consultancy Services - Research and Innovation - Chennai, India

Computer Vision Engineer

Jul, 2015 - Oct, 2022

Project Name: Smart Turn - TCS AvianaTM

• Developed a custom keypoint classification model to accurately identify aircraft types.

- Trained and built a robust model to detect and monitor **38**+ **aircraft turnaround activities**, GSE vehicles, and associated equipment.
- Optimized model performance using Intel OpenVino framework, achieving a 72% increase in throughput and a 41% reduction in latency through model compression and quantization with minimal accuracy compromise.
- Designed anomaly detection logic to identify potential delay-causing events and alert the TCS AvianaTM Engine.

Project Name: PalPicker - Autonomous Mobile Robot

- Developed **pallet and roller cage detection models** to accurately identify and locate objects.
- Collected and processed point cloud data from an **Intel RealSense camera** to determine object position and orientation in 3D space.
- Translated position and orientation data into ROS format to initiate autonomous robot docking sequences.
- Created a robust re-attempt sequence to handle and recover from improper docking scenarios, which made sure **99.8% successful docking**.
- Developed a computer vision algorithm to precisely detect and understand the position and orientation of charging docks using AprilTags.

Project Name: Chute Congestion Identification

- Created a computer vision model to **identify and localize congestion** on chutes from video feeds across **140+ cameras**.
- Monitored congestion intensity and notified ground staff of exact locations, reducing turnaround time to clear congestion from **20 minutes to 90 seconds**.

ACHIEVEMENTS

- Secured 1st place in AI Datathon conducted by Ingram Micro as part Data & AI Summit 2024 for building AIEnricher, an LLM- and Airflow-powered solution that augments product rich content in product catalogs.
- Recipient of Facebook developer circle scholarship.
- "Innovista Topseed" award for selection as a leading innovator in TCS Innovista.
- "Innovation Super Star" award for building innovative solutions within the RnI group.
- "Innovation Pride" award for securing runner up position at a hackathon CHINNA.
- "Best Innovation" award in a 24 hour hackathon conducted by SAS airlines to build a seamless travel experience solution.
- "On the Spot" award for rapid development and delivery of a high-impact solution within a week.
- "CLP Faculty" award for successfully conducting 20+ workshops and training sessions on various technologies.
- "Champion of ILP" award for outstanding performance during initial training programme.

COURSES AND CERTIFICATIONS

- Deep Learning Nanodegree Udacity (Aug, 2020)
- Introduction to Deep Learning using PyTorch Udacity (Feb, 2020)
- TensorFlow from Basic to Mastery DeepLearning.AI (2019)
- Machine Learning by Andrew Ng Coursera (2018)
- Oracle Certified SE6 Java Professional Oracle (2015)

EDUCATIONAL QUALIFICATION:

Bachelor of Engineering (Computer Science and Engineering)