Shrunali Suresh Salian

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Work Experience

Tatum Robotics ***(Assistive tech for DeafBlind)*** May 2024 – August 2025
Software Engineer, Machine Learning *Seattle, WA*

- Designed and deployed deep learning models for ASL recognition using PyTorch and TensorFlow, improving predictive accuracy by 40% through feature engineering, statistical analysis, and iterative refinement.
- Built QA/monitoring loops for model deployments to track prediction stability and data integrity, partnering with product to define KPIs, alerting, and guardrails, enabling iterations and reliable releases.
- Built production Python modules with tests, added logging and data pipelines for SQL/Tableau analysis, and partnered cross-functionally with engineering to unblock launches and improve reliability at scale.

Augmented Cognition Lab, Northeastern University August 2023 – December 2023
Research Project Assistant *Boston, MA*

- Engineered statistical models for motion analysis, improving accuracy from 30% to 72% using Random Forest, XGBoost, and Logistic Regression, with cross-validation and Linux-based pipelines for benchmarking.
- Reduced large-scale analysis runtime by 65% via CUDA acceleration and optimized PyTorch data loaders on GPUs, profiling bottlenecks, and executing experiments on Linux with fixed seeds for reliable results.
- Led experimental design and A/B validation with SciPy and Statsmodels, focusing on effect sizes, CIs, power analysis, and guardrail metrics, turning findings into ready-to-ship recommendations for launches.

Auxi.ai May 2023 – September 2023
Software Engineer *Boston, MA*

- Optimized real-time inference using PyTorch Lightning and TensorFlow Serving for multimodal systems, profiling GPU bottlenecks and tuning batch size and concurrency to improve latency-throughput trade-offs.
- Built NLP classifiers with Hugging Face, adding data validation, schema checks, and experiment tracking, and documented metrics and failure modes to guide iteration and ensure stable, reproducible behavior.
- Implemented constrained vision-language workflows with Stable Diffusion for precise image manipulation from text prompts, adding guardrails, templates and checks to ensure predictable output and safe edits.g., Stable Diffusion) for precise image manipulation from text inputs.

Media.net June 2019 – June 2020
Data Analyst *Mumbai, India*

- Built automated pipelines and dashboards for ad-tech metrics using SQL, Python, and Tableau, improving revenue tracking by 25% and ad yield by 11%, and enabling experiments with engineering-ready reporting.
- Ran A/B tests and delivered engineering-ready analyses to iterate on placement/targeting strategies, quantifying lift, testing assumptions, and providing recommendations that optimized campaign performance.

Technical Content & Open Source Contributions

Built a TF–IDF vector-space Search Engine | *Information Retrieval* | GitHub

- Tokenized/stemmed text, computed TF–IDF vectors (log-scaled IDF) and ranked via *cosine similarity*; then added user-feedback–driven learning-to-rank (click/dwell signals) with scikit-learn to re-weight features and improve relevance; documented trade-offs (stop-words, document-length bias, CPU costs).

DBDB (Dog Bed Database) — persistent key–value store | *Systems & Storage* | GitHub

- Implemented a Python key–value store with a clear **logical/physical** split: an immutable **binary tree** (logical layer) over a **mostly append-only** storage file (physical layer); used **ValueRef/NodeRef** indirection to avoid loading full trees; provided **atomic, durable commits** by writing new nodes then atomically updating the **root address**; enabled **many-readers/one-writer** via a file lock.

Education

Northeastern University, Boston, MA May 2024
Master of Science in Data Analytics
Courses: Natural Language Processing, Computer Vision, Data Mining, Data Science, Database Management

University of Mumbai, Mumbai, India May 2019
Bachelor of Engineering in Computer Engineering
Courses: Object Oriented Programming, Data Structures & Algorithms, Software Engineering, AI, ML, Advance DBMS

Technical Skills

Languages: C++ (C++14/17/20), Python, JavaScript / TypeScript, Golang, Shell **Systems & Infra:** Real-time software, embedded systems, microservices, event-driven architecture, distributed systems, APIs, Protocol Buffers, gRPC, ROS **ML / Data / Vision:** Computer vision, 3D reconstruction, deep learning, PyTorch / TensorFlow, model serving, data pipelines, training & inference optimization **Cloud / Deployment / Tools:** Docker, Kubernetes, CI/CD, AWS / GCP, orchestration, monitoring (metrics / tracing), logging, ECS / Lambda, S3, Kinesis **Core CS & Algorithms:** Data Structures, Algorithms, System Design, Performance Optimization, Numerical Methods