Vatsal Agrawal

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Education

Indian Institute of Technology, Delhi *New Delhi, India*
M.Tech in Computer Science and Engineering - ***CGPA: 9.125*** *July 2021 – June 2023*
GATE AIR: 157

Skills

Languages: Python, C, Java, NodeJS, Go, Haskell —— **Tools:** Jenkins, Harness, TeamCity, Cursor, Copilot, VMware
Other: AWS, Azure, Kubernetes, Docker, SQL, NoSQL, Redis, Kafka, SpringBoot, PyTorch, Terraform, Gradle, Makefile, gRPC, Hibernate, Kong, TLS, Stacker, YOLO, GAN, Celery, RabbitMQ, MATLAB, OpenCV, React, Flask, AuthN

Experience

Splunk AppDynamics (Software Engineer) *Bengaluru, India*
July 2023 – Present

Team Self-Hosted AppDynamics

- Served as **Primary Technical Lead for Virtual Appliance** (revenue-critical product).
- Optimize OS, CLI, infrastructure (MySQL, Redis, Kafka, Elasticsearch, Nginx), and AppD offerings for K8 cluster. Attained **60% customer outage reduction** and added new features for multi-dollar subscription renewals.
- Streamlined package build processes and parallelized VM image (AMI, QCOW2, OVA, VHD) creation, accelerating development cycle time by 70% and reducing image size by 27% to enhance customer installation ease.
- Designed a **migration framework for TBs of data** (MySQL, file system) from monolithic to the VA microservice offering, enabled product consolidation, and achieved maintenance and cost reduction.

Team OpenTelemetry Ingestion System

- Designed unified API libraries for Python, Node, and Java, providing a single, consistent interface for diverse cloud service operations (AWS/Azure/on-premises). It eliminated redundant codebases and enabled seamless migration.
- Delivered the **OTel usage-based billing feature** through accurate span/trace measurement. Built Kafka-driven Flask services for data ingestion/processing and implemented a scalable, HA TimeScaleDB (Patroni) on K8 for storage.
- Led design of race-free OTel microservice for intelligent transaction-to-pod mapping, dynamically creating/deleting pods based on the state of BT. This design, bypassing Redis and Lambda, reduced infrastructure costs by 15%.

Recognition

- Recognized for developing a Terragrunt library **(50% cloud dev testing cost reduction)**.
- Honored as **"VA Savior"** for short-notice critical feature delivery, technical leadership, and support across time zones.
- Awarded for leading OTIS's cloud-agnostic migration (AWS to On-Prem/Azure) for customer acquisition/retention.
- Honored with the Outstanding Teaching Assistant award at IITD.

Publications

NetraDeep - Integrated Deep Learning and Image Processing System *Nov 2024*

- Novel, **ACM-Journal published** hybrid YOLO-based system (with React UI) for precise retinal HE segmentation, **overcome challenges of limited labeled/unlabeled datasets. Deployed at AIIMS, Delhi**, for clinical trials on diabetic retinopathy detection. Achieving accuracy of 93.33% as validated by medical experts.

NetraVeins - Deep Learning Assisted Plus Disease Screening *Jan 2023*

- Developed a **specialized algorithm for hierarchical parent-child ordering and classification of retinal vessel tree maps** using MATLAB and OpenCV, integrating them with RCNN, UNet, and GAN-based DL models for enhanced diagnosis of ROP and plus disease. Achieving more than 90% accuracy as verified by experts of AIIMS, Delhi.

Projects

- Led **NetraPublic, a multi-institutional initiative**, to develop a mobile-based fundus video capture system, reducing infrastructure costs by 90%. Leveraging computer vision for automated diagnostics and disease progression tracking.
- **Thread Library**: POSIX-level efficient, user-level thread library (with locks, context-switching, and scheduler).
- **Neural Network Library**: A performant multi-layer perceptron library in C for classification and regression.
- **Live Stream Processor**: Live, scalable, and fault-tolerant tweet processing service using Redis, RabbitMQ and Celery.
- **Malware Modifier**: Obfuscated malware database and performed adversarial attacks on AI and commercial antivirus.
- **Haskell Parser and Lexer**: An award-winning parser and lexer, with lambda evaluator and type checker.
- **Cipher Breaker**: A fast, N-Gram (NLP) based algorithm to break substitution ciphers, with low CPU utilization.