Jignasu Pathak

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Experience

Amazon
Dec 2023 – Jan 2026

Software Development Engineer I — *Tennessee, USA*

Computer Vision Inference Pipeline

- Engineered a computer vision inference pipeline processing 500K+ images/day and meeting a 600 ms P95 latency SLA, automatically flagging suspected defects for manual inspection kickout.
- Deployed a fine-tuned ResNet-152 model to industrial edge computers with Nvidia GPU using AWS IoT Jobs.
- Built a hardened CI/CD release pipeline to publish Docker images in AWS ECR, including vulnerability scans and multi-container integration tests.
- Orchestrated controlled edge deployments, promoting releases from one-box canaries to region-staged rollouts with rollback and deployment health tracking.
- Implemented GDPR right to erasure by maintaining a DynamoDB-backed ownership index derived from image metadata and reliably deleting data from region-scoped S3, with OCR-based metadata enrichment plus compliance monitoring and alarms.
- Implemented continuous model evaluation on SageMaker, sampling 1,000 images/day with balanced coverage across different belt types and defects to monitor operational performance over time.
- Designed dynamic thresholding to tune precision/recall trade-offs in production, reducing false positives by 80% with $\leq 3\%$ recall regression and cutting unnecessary manual inspection kickouts in defective-item detection.

Operational Excellence

- Built and shipped a full-stack problem-solve web app (React + Java) for warehouse associates; deployed on ECS Fargate and adopted by 1200+ weekly active users across 5 sites, improving issue resolution throughput and consistency.
- Eliminated error-prone manual entry in item-identification defect resolution by coordinating asynchronous calls across services, cutting 5 minutes per case and saving 100 hours/week while reducing downstream rework.
- Led reliability validation by running stress test on a single node using weighted routing, surfacing bottlenecks and informing autoscaling policy based on real workload behavior.
- Improved operational resilience by standardizing runbooks and on-call procedures, reducing single points of failure from implicit tribal knowledge.

Tech: Java, Python, React, Docker, AWS (IoT Greengrass, Lambda, Rekognition, SageMaker, S3, ECR), CI/CD

Virginia Tech
Jan 2023 – Dec 2023

Graduate Research Assistant — *Blacksburg, Virginia*

- Published Thesis on Explainability in Human-AI Teaming, showing how feature attribution and counterfactual explanations influence human trust and decision-making in human-AI collaboration.
- *Tech:* Python, ML experimentation, analysis, research writing

Amazon
May 2022 – Aug 2022

Software Development Engineer Intern — *Arlington, Virginia*

- Built a serverless dashboard (**React + AWS Lambda**) to visualize IoT deployment errors; integrated **API Gateway + DynamoDB** and reduced incident response time from 1-2 hour to 15 minutes, improving operational bottlenecks.
- *Tech:* React, AWS Lambda, API Gateway, DynamoDB

Education

Virginia Tech, Blacksburg
Dec 2023

*Master of Science in Computer Science — **3.77/4*** — *Virginia, USA*

Vellore Institute of Technology
July 2021

*Bachelor of Technology in Electrical and Electronics Engineering — **8.36/10*** — *Vellore, India*

Skills

Languages: Java, Python, TypeScript, JavaScript
Backend: Spring Boot, Node.js, Flask, REST APIs, Distributed workflows, Asynchronous orchestration
Frontend: React, Next.js, HTML, CSS
AWS: IoT Greengrass, Lambda, API Gateway, SageMaker, DynamoDB, S3, ECR, CDK, Rekognition
ML/Data: Computer Vision (ResNet), PyTorch, TensorFlow, Pandas, NumPy, Model evaluation
DevOps/Tools: Docker, CI/CD, Git, Linux, Jira, Google-OR-Tools