Thabhelo Duve

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Education

Talladega College — Talladega, AL
Bachelor of Arts in Computer Science and Mathematics — GPA: 4.0/4.0 — *Aug 2023 – May 2027*

Relevant Coursework: Algorithms & Data Structures, Networks, Operating Systems, Web Dev, OOP, Calculus I-III, Discrete Math
Certifications: EdX CS57, EdX CS50, AWS Cloud, Propel - Swift II, AI/ML and Culture, Version Control

Experience

Software Development Engineer Intern — May 2025 – Present
Amazon - Expansions and Growth Organization, Mobile App Growth Team — *Austin, TX*

- Developed a production-scale generative AI platform leveraging Amazon Bedrock, and Titan models for intelligent data pipeline automation, processing 500TB+ of data with 99.7% accuracy, reducing manual data processing by 78%
- Engineered a RAG (Retrieval-Augmented Generation) pipeline integrating vector databases (Amazon OpenSearch), semantic search algorithms, and multi-modal embedding models to streamline cross-organizational data access.
- Developed microservices architecture using AWS Lambda, API Gateway, and DynamoDB for scalable data ingestion pipelines, event-driven processing with SQS/SNS that handles 2M+ daily transactions with sub-100ms latency and automatic failover mechanisms.
- Implemented CloudWatch monitoring dashboards and assisted in A/B testing framework setup for ML model deployments, contributing to team's 45% improvement in feature rollout velocity

Founder & Head of Engineering — Jan 2025 – Present
Deep Ubuntu Labs — https://www.deepubuntu.com — *Remote*

- Building DeepUbuntu AV, an autonomous vehicle perception system with multi-modal sensor fusion algorithms optimized for edge cases (low-light, unpaved roads, informal traffic) in rural America, developing regions in Africa and Asia.
- Built and open-sourced cowcow CLI, for autonomous vehicle sensor data collection and labeling in offline environments with intelligent recording, real-time signal-to-noise analysis, sensor clipping detection, automatic silence cutoff, and SQLite upload queuing and sync for edge computing scenarios in remote locations.
- Implementing a MLOps infrastructure with Kubernetes-based model serving for real-time inference, Apache Kafka streaming for sensor data pipelines, Redis caching for perception results, and monitoring stack (Prometheus/Grafana) with metrics for safety-critical system performance across diverse global driving environments.

PROJECTS & INNOVATIONS

FinePrint | *Claude 4, spaCy, LangChain, DeBERTa-v3, FastAPI, Chrome Extension* — *https://www.fineprint.vercel.app*

- Engineered an NLP contract-intelligence platform leveraging transformer-based language models (DeBERTa-v3) with spaCy tokenization pipelines, and semantic search with 92% precision and secured $12K seed funding
- Implemented document processing architecture with async text analysis (1,000-char sliding windows), TLS certificate validation, and RESTful API with FastAPI backend serving Chrome extension through WebSockets
- Architected hybrid ML classification pipeline combining fine-tuned transformer embeddings, regex matching, and ensemble learning methods for multi-label risk categorization with confidence thresholding, and severity weighting.

CowCow | *Rust CLI, FastAPI, SQLite, gRPC, Voice Activity Detection, SNR Analysis* — *github.com/Thabhelo/cowcow*

- Open-Sourced a offline-first audio data collection CLI too with Rust CLI and FastAPI backend with SQLite persistence and gRPC/REST communication protocols
- Built audio quality control engine with Signal-to-Noise Ratio (SNR) analysis, dynamic clipping detection, and Voice Activity Detection (VAD) with configurable quality thresholds and automated scoring algorithms
- Implemented token-based reward system with transaction logging, quality-weighted reward distribution, and comprehensive user analytics dashboard for measuring contribution quality and engagement
- Developed advanced data export pipeline supporting multi-format output (JSON/WAV), temporal filtering, language-based segmentation, and QC metric-driven dataset curation with automated validation & integrity checks

Technical Skills

Awards & Recognition: 8x Hackathon Winner including US Army xTech 2x Finalist, Experian #IYKYK and American Airlines BE Smart Hackathon
Technologies: Java, Python, SQL, JavaScript, HTML/CSS, Rust, Git, Docker, Kubernetes, AWS, Redis, MongoDB
Frameworks & Libraries: React, Node.js, Express.js, Django, Flask, FastAPI, Pandas, PyTorch, LangChain, NumPy, Tensorflow, Prometheus/Grafana, spaCy, OpenCV
Career Development: ColorStack, CodePath, BEYA2024, TMCF, Apple HBCU C², 300+ hrs Community Service
Languages: English (Professional), Zulu (Native), Shona (Professional), Spanish (Elementary)