Avitra Phon

Software Engineer | Full-Stack Developer | Cloud & Infrastructure Enthusiast
Passionate about building scalable, cloud-native systems with a focus on infrastructure automation, production-grade software delivery, and developer experience.

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TECHNICAL SKILLS

Languages: Java • Python • C++ • JavaScript • Typescript • SQL • Ruby • HTML/CSS
Frameworks & Tools: React.js • Node.js • FastAPI • Flask • Django • Express.js • Next.js • Streamlit • Firebase • Excel • Rails
Cloud & DevOps: AWS • Google Cloud • Docker • Git • CI/CD • Linux • Jenkins
AI/ML & GenAI: Scikit-learn • PyTorch • spaCy (for NLP) • LangChain • Gemini API • Qiskit (basic)
Databases: PostgreSQL • SQL • MongoDB • Redis • Neo4j • GraphDB

EXPERIENCE

AI and IoT Intern — Singapore
Changi Airport Group (CAG) — Sept 24 to Jan 25

- Built a cloud-hosted internal platform using Streamlit to automate data annotation and pre-processing, improving data pipeline efficiency by 3–4× and reducing manual overhead by 8+ hours per project.
- Developed and deployed a full-stack real-time monitoring system (Node.js + Python) for airport runways, enabling dynamic control of 7+ camera feeds with sub-3s response latency and over 85% accuracy.
- Designed and integrated a vehicle recognition pipeline processing 1,000+ daily entries, enabling automated logging of license plates and key metadata with >70% detection accuracy.

VOCUS Voice of Customer Analysis – **AI/ML and Backend Lead** — Singapore
DBS Bank — May 24 to Sept 2024

- Designed and deployed scalable backend pipelines for real-time sentiment classification, integrated with cloud dashboards to deliver actionable insights using Google Cloud Functions and Cloud SQL.
- Achieved 85%+ model accuracy and reduced manual review effort by 60%, enabling faster turnaround and improved customer service decision-making.
- Built and optimized RESTful APIs integrated with a Ruby on Rails frontend, deployed on Google Cloud Run to process sentiment analysis for 1000+ feedback data with sub-7s average response time.
- Integrated and optimized Gemini 1.5 API workflows with few-shot learning and embedding techniques to streamline backend services for sentiment analysis and, boosting issue resolution efficiency, and driving data-driven improvements from negative feedback.

PROJECTS & COMPETITION

AlphaLens – **Full-Stack Developer** — Singapore
Personal Project — Jul 25 to Present

- Developing a modular financial analytics platform with a React + Next.js dashboard and chatbot interface, powered by FastAPI and Node.js backends for secure, scalable query handling—enabling users to perform complex investment analysis using natural language via LangChain-based RAG workflows with both local and cloud LLMs.
- Implementing NLP pipelines with spaCy and Transformers to extract structured intelligence from unstructured financial text, visualized through interactive dashboards and Neo4j-based graphs.
- Designing scalable data ingestion pipelines to process macroeconomic indicators from public financial APIs (World Bank, Google News, FRED), integrated with LLM-based summarization for real-time insight delivery.

AI Fashion Companion App – **AI Engineer and Full-Stack Developer** — Singapore
Personal Project — Jun 25 to Jul 25

- Delivered a scalable end-to-end AI wardrobe management system with Flutter frontend and Django REST backend, managing 1,000+ user clothing items and enabling personalized outfit generation via LLM-based RAG pipelines.
- Engineered an automation system combining YOLO World object detection, SAM segmentation, and CLIP embeddings, achieving >70% accuracy in clothing item classification and visual similarity retrieval using Qdrant vector search.
- Orchestrated distributed inference workloads using Celery and Redis, reducing API response latency by 40% and improving app responsiveness.

HotHawkersInYourArea (WTH 2024 Hackathon) – Model and LLM Lead   **Singapore**
Singapore University of Technology and Design   **Nov 24 to Dec 24**

- Deployed a full-stack real-time analytics pipeline integrating YOLOv8 and ByteTrack for zone-based people tracking at 20 FPS, achieving 80–90% detection accuracy.
- Integrated tracking model outputs with Flask backend and Firebase, delivering real-time data to React dashboards for continuous monitoring and insights.
- Developed an LSTM model using temporal and cyclical features to forecast queue dwell times for the next hour, achieving a validation MAE of ~0.32 as a foundation for ongoing improvements with future data expansion.

Gobble Food Review App – UI/UX and Algorithm Developer   **Singapore**
Singtel x Singapore University of Technology and Design   **Jan 24 to Apr 24**

- Runner-up in SUTD's industry showcase, selected by Singtel for innovation and impact.
- Created an Android app with intuitive UI/UX using Java and XML layouts, tested by 50+ users with sub-7 second response times during showcase.
- Designed priority-based restaurant recommendation engine using Priority Lists and Heap Sort, demonstrating notable improvement in recommendation quality compared to baseline sorting methods.
- Integrated OpenAI's ChatGPT API to help users compare restaurants based on profiles, reviews, and menus, reducing decision time by over 50% through personalized recommendations.

SeatAIfy (GenAI Hackathon) – Algorithm and LLM Lead   **Singapore**
Temasek Holdings x Singapore University of Technology and Design   **Feb 24 to Mar 24**

- Designed a 3-tier enterprise GenAI system using Azure OpenAI to automate event guest seating logic and generate actionable recommendations.
- Developed a business-focused internal tool using Streamlit and a contextual chatbot able to interpret HR policies and seating constraints.
- Engineered a seat allocation framework employing advanced algorithms with a focus on hierarchical data structures, which reduced processing time and manual intervention by event planners.

EDUCATION

Singapore University of Technology and Design (SUTD)   **Singapore**

- Bachelor of Engineering (Computer Science and Design) – Honors | Expected Graduation: May 2026
- GPA: 4.35 / 5.0 | SUTD ASEAN Undergraduate Scholarship
- Available for full-time employment starting May 2026