Akilan Chithra Sathish

972-292-0537 | akilanchithrapro@gmail.com | linkedin.com/in/akilanchithrasathish/ | github.com/csakilan

Education

University of Texas at Dallas Dallas, TX
Bachelor of Science in Computer Science, Hobson Wildenthal Honors College, GPA: 4.0/4.0 *Expected May 2027*

Relevant Coursework: *Data Structures, Linear Algebra, Discrete Math, Computer Architecture, Unix Programming*

Technical Skills

Programming Languages: Python, JavaScript/TypeScript, C/C++, Java, Go, SQL, Swift, HTML/CSS
Cloud, DevOps, and Dev Tools: AWS (SageMaker, Lambda, S3, EC2), MLOps, Prompt Engineering, Git, VS Code
Frameworks and Libraries: TensorFlow, PyTorch, Docker, React, FastAPI/Flask, GraphQL, PostgreSQL, Amazon SageMaker, Linux/Unix, MQTT, Leaflet, Librosa, Tone.js, ROS2

Experience

UTD Multi-Scale Integrated Intelligent Interactive Sensing(MINTS) June 2024 – Present
Undergraduate Researcher | Dr. David Lary | SharedAirDFW Team *Dallas, TX*

- Redesigned SharedAirDFW with Earth Engine + Geemap, giving UTD ownership and easing und for physics students.
- Merged four microservices into one Flask + Leaflet + MQTT pipeline, **halving** maintenance work and reducing complexity.
- Added a Quarto chart automation pipeline through Jupyter, **doubling** data visualization speed for student pollution research.

UTD NOVA Jan 2025 – Present
Software Developer | Autonomous Driving Group | Vehicle Interface Team *Dallas, TX*

- Designed ROS2 fusion module integrating GNSS, IMU, and LiDAR sensor data to improve vehicle localization accuracy.
- Cut pose estimation complexity by **50%** through optimized sensor fusion algorithms and streamlined data handling.
- Migrated legacy GPS odometry to hybrid pipeline, reducing inaccuracy from **3 m** to $<$ **1 m** on **10-minute test drives**.

UTD Association of Computing Machinery(ACM) Aug 2024 – Dec 2024
Undergraduate Researcher | Maestro | Synthetic Data for CLAP Audio Model *Dallas, TX*

- Proved that synthetic audio datasets improve CLAP accuracy **6% over SOTA** in low-data scenarios, enhancing robustness.
- Built the PyTorch evaluation suite to compute mAP for OpenMIC-2018 and cosine similarity for GTZAN music datasets.
- Created an LLM-based prompt pipeline using keyword corpus, boosting diversity in synthetic audio generation by **60%**.

CareerBoosts June 2023 – Aug 2023
Backend Development Shadow | Full Stack Team *Frisco, TX*

- Built FastAPI + PostgreSQL ingestion pipeline processing **20,000+** daily requests with low latency, ensuring scalability.
- Developed a Flask+React dashboard with Docker to track career platform metrics, improving reporting speed by **40%**.
- Created GraphQL endpoint linking backend to frontend on career portal, streamlining JSON queries reducing overfetching.

Projects

DJSplitter | *React, TypeScript, Flask, Demucs, Celery, Redis, Librosa, Tone.js* July 2025

- Built a web-based music stem-separation and mixer using React/Vite + Tone.js, enabling **real-time** controls.
- Developed Flask backend with Celery, Redis, and Demucs for asynchronous **CUDA/Metal-accelerated** stem separation.
- Extracted tempo and key via Librosa and custom scripts, enriching audio with programmatically calculated metadata.

GestureController | *Python, MediaPipe, OpenCV, Flask* June 2025

- Developed a **touch-free** volume and brightness controller using Flask and webcam gesture inputs, boosting accessibility.
- Implemented **real-time gesture recognition** with MediaPipe and OpenCV, mapping gestures to the OS for fast feedback.
- Wrote shell scripts interfacing with the Unix kernel for precise system calls, enabling faster and more reliable adjustments.

MelodyGen | *Python, Flask, FastAPI, Tensorflow* December 2024

- Developed an RNN-based composer achieving **90%** accuracy on a **10,000+ melody** dataset for next-note suggestions.
- Integrated Next.JS frontend with TensorFlow and Flask backend via NGINX proxy, achieving **sub-90ms** latency.
- Automated MIDI-to-tensor datapipeline with quantization to achieve **2-second** processing time per generation step.

Certifications

AWS Certified Machine Learning Engineer - Associate | MLA-CO1 July 2025

- Applied Machine Learning, Cloud Computing, Data Preprocessing, Data Science, Deep Learning, MLOps, Cloud Security

AWS Certified AI Practitioner | AIF-CO1 July 2025

- Fundamentals of AI, Generative AI, Foundational Model Applications, Responsible AI, Security & Governance in AI

Palo Alto Networks Certified Cybersecurity Entry-Level Technician | PCCET July 2024

- Cyberattack Lifecycle, Malware & Threat Types, Cloud & Network Security Fundamentals, Palo Alto Product Basics