Alexander Korte

+1 (210) 213-0107 | alex.k.korte@gmail.com | linkedin.com/in/stelath | github.com/stelath | alexkorte.dev

Education

Clemson University *Expected Graduation: May 2026*

Bachelor of Science in Computer Science — Minor in Artificial Intelligence ***GPA: 3.93/4.00***

Bachelor of Science in Physics

Skills

Languages (Ordered by proficiency): Python (10 years), C/C++ (3 years), JavaScript (8 years), TypeScript (3 years), HTML/CSS (10 years), Swift (8 years), C# (6 years), Java (6 years)

Software: Git, PyTorch, NumPy, Slurm, React.js, Next.js, Firebase, GCP, AWS, Unity, MongoDB

Experience

Modular - Machine Learning Engineer Intern *May 2025 – Aug 2025*

- Brought up the Qwen3 & InternVL family of models in MAX, tensor parallel for Gemma3, multimodal Gemma3, fixed chunked prefill on VLMs, and GPT OSS while maintaining a kl-div from reference models $< 4.0 \times 10^{-4}$.
- Above models/optimizations directly allowed Modular to cut inference costs by 80% alongside SFCompute.
- Wrote optimized Conv2D kernel in **Mojo achieving** $> 95\%$ **NVIDIA's cuDNN** in tensors under 3.26 million parameters
- Developed tool for layer-by-layer model validation/debugging and refactored sharding protocol fusing distributed layers.

Arccos Golf - SWE Intern (through CU Capstone) *Aug 2024 – Dec 2024*

- Led a 5-person agile team to develop and deploy an AI-powered golf course mapping system using **Segment Anything** and **Mask2Former**, reducing a **35-minute** manual process to a **single click** minimizing human intervention to edge cases.
- Built production system with **React** frontend and **FastAPI** backend, enabling seamless integration through **REST API**

Clemson University Advanced Imaging Lab - Research Assistant *Aug 2022 – Present, Part-time*

- Working on Video Denoising, Volumetric Neural Representations, Computer Vision & Generative AI under Prof. Niyani Li
- Developed a SOTA (state-of-the-art) unsupervised video denoising model for cellular microscopy in **PyTorch**, achieving 25× faster training & 50% smaller size than prior SOTA methods. Second Author, Published & Presented at CVPR 2024.
- Benchmarked and quantitatively evaluated multiple SOTA models to validate performance gains.

CU-ICAR/VIPR-GS - Research Assistant *Aug 2023 – Present, Part-time*

- Collaborated with the U.S. Army Research Laboratory (DEVCOM) on autonomous off-road vehicle navigation. Specifically, systems improving **SLAM**; awarded **"Best Poster – Off-Road Autonomy"** at the VIPR-GS Expo.
- Designed a novel twin-encoder–decoder architecture for low-overlap **point cloud registration**, achieving a **4 GB** memory footprint and **6.4 cm** registration accuracy on the KITTI dataset, outperforming SOTA models such as **GeoTransformer**.

Projects

Comic Strip | *https://devpost.com/software/comic-strip-c0jw72*

- Engineered a web app for UGAHacks 2024 using **React** and **Flask** that generates comic books from a single text promp.
- Utilized **Prompt Engineering** alongside **GPT-4** & **OpenAI's API** for story generation and diffusion model prompts.
- Implemented custom AI pipeline to generate styleized comic panels and position text bubbles utilizing **CLIPSeg** model and a fine-tuned **Diffusion Model** deployed on Hugging Face demand scalable nodes.

CU-Rocketry Avionics Software Development | *https://github.com/CURocketEngineering*

- Led 7-person team developing flight software for 10,000-foot rocket at the 2024 Spaceport America Cup (SAC).
- Directed 4-person subteam implementing Active Aerobraking system using **Kalman filter** for predicting rocket velocity.
- Developed flight software for 2023 SAC enabling 128 Hz sensor data collection and **real-time telemetry** via LoRa Radio.

Accomplishments

2x AI/ML Top Conference Presenter (2024 CVPR Workshop & 2024 ICIP)

- Poster presentation on Unsupervised Microscopy Video Denoising (CVPR 2024). A novel model that improves the quality of microscopy videos by removing noise without needing prior knowledge of its type.
- Acted as a proxy presenter for Mary Agieboto on her paper: Unsupervised Coordinate-Based Video Denoising (ICIP 2024). A model designed to perform high quality video denoising in extremely data sparse environments.

2024 CU HackIt - Best Implementation | *https://devpost.com/software/munch-67o4eh*

- Won 1st place (62 teams) at CU HackIt for developing a native iOS app to help users find mutually preferred restaurants.
- Led front & backend development, using **Swift**, **Firebase**, **Node.js**, integrating **Google Auth** and **Google Places API**.

Theta Tau Professional Engineering Fraternity | *https://clemsonthetatau.com/*

- Developed full stack website for members using **Next.js** and **Firebase**, achieving 0.2s load time (5x improvement).
- Implemented **NoSQL** database, **Storage Buckets**, and **Serverless Functions** for improved performance and reliability.