Zain Karim

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EDUCATION

University of Texas at Dallas   Expected graduation May 2026
BS Computer Science, 3.91/4.00 Major GPA   *Richardson, TX*
- Relevant Coursework: Data Structures and Algorithms, Linear Algebra, Discrete Math, Computer Organization.

EXPERIENCE

Responsible AI Laboratory at the University of North Texas   May 2023 – September 2023
Undergraduate Researcher   *Denton, TX*
- Engineered **Generative Adversarial Networks (GANs)** with **Python** for synthetic image generation.
- Engaged in experimental design for manipulating image generation parameters and applied computational imaging techniques to reverse engineer popular AI image generation tools.

Photographique   July 2019 – September 2022
Camera Sales Manager   *Dallas, TX*
- Integrated online services with point-of-sale system to synchronize inventory levels in real-time, saving 100s of hours of individual effort.
- Managed analog and digital camera inventory, lead sales strategy, and engaged leads, subsequently generating over $25,000 revenue in the last year.

PROJECTS

Interactive 3D Solar System Simulation   *https://github.com/zainkarim/solar-system-model*
- Developed a full-stack interactive 3D model using **React**, **Three.js**, and **Node.js**, featuring dynamic data visualization of celestial bodies via a **RESTful** API connected to a **MySQL** database.
- Enhanced user experience by implementing responsive web design and **WebGL** rendering techniques, achieving efficient data management and seamless interactivity in a full-stack environment.

Live Dallas Skyline Color Analysis Twitter Bot   *https://github.com/zainkarim/dallas_skybot/*
- Developed an automated **Python**-based color analysis tool for live video feeds, implementing **PIL** and a custom algorithm to identify and match the Dallas Skyline's colors to the nearest Pantone equivalent.
- Integrated the **Twitter API** for automatic tweeting of image analysis results and deployed using **AWS EC2** and **Docker**, ensuring scalable and reliable application performance for continuous live video feed processing.

Image Based Optical Character Recognition   *https://github.com/zainkarim/image-ocr*
- Built an OCR program with **Python**, **EasyOCR**, and **OpenCV** which reads a user-specified image, displays the image with bounding boxes around each detected English character, and prints the detected text to the console.

Tweet Sentiment Analyzer   *https://github.com/zainkarim/tweet-sentiment-analysis*
- Developed a **Python** utility that analyzes a database of 10,000 tweets for positive, negative, and neutral sentiment using **NLTK** and visualizes the resulting classifications and sentiment scores with **Matplotlib.**

LEADERSHIP

Collin College
Programming Fundamentals I Tutor
- Held weekly virtual and in-person office hours to assist a class of over 20 students in supplemental instructions for Programming Fundamentals I in **C++**, resulting in a 6% increase in class averages.

TECHNICAL SKILLS

- **Programming Languages:** C, C++, Java, JavaScript, ASM, Python, x86 Assembly
- **Frameworks and Libraries:** React, Three.js, OpenCV, PIL, Matplotlib, NumPy, NLTK
- **Tools:** AWS EC2, Docker, Git, Linux, MASM, MySQL, Unix, Visual Studio Code, VIM, WebGL