Elden Deguia

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Education

University of Texas at Dallas Richardson, TX

Bachelor of Science in Computer Science - 4.0 GPA - Dean's List *Aug 2023 – Dec 2026*

- **Coursework**: Data Structures & Algorithms, Computer Architecture, Operating Systems, Database Systems, Systems Programming in UNIX, Software Engineering, AI, Advanced Algorithm Design & Analysis, Computer Networks

Technical Skills

Languages: Java, Python, C/C++, JavaScript/Typescript, HTML/CSS, SQL, Assembly, Bash Scripting
Libraries/Frameworks: React, Node.js, Express, Flask, TensorFlow, Keras, Pytorch, OpenCV, C++ Threads
Developer Tools: Git, GitHub, AWS, LucidChart, Unix CLI, APIs, VS Code, IntelliJ, Jupyter Notebook

Experience

Artificial Intelligence Mentee September 2024 – December 2024

Artificial Intelligence Society at UTD *Richardson, TX*

- Collaborated with a team of 5 members along with a project lead to research and develop Medvisor, an AI-powered medical imaging solution
- Contributed to data preparation, model training, and presentation preparation, ensuring alignment with project expectations
- Gained experience working in an agile, Scrum-based team environment, applying problem-solving and communication skills to create a real-world AI application.
- Awarded 1st Place at AIM Night, a society-wide showcase where projects were presented to a panel of judges for evaluation.

Projects

Medvisor | Visit | GitHub | *Python, React, Flask, Tensorflow, OpenCV* Sept. 2024 – Dec. 2024

- Contributed to the development of Medvisor, a full-stack, AI-powered application which detects and diagnoses medical conditions from spine MRIs
- Preprocessed over 300 raw 3D MRI scans using **OpenCV**, extracting the most relevant slice from each scan and converting them into normalized PNGs which could be utilized to train a model
- Fine-tuned a pretrained ResNet50 model using **TensorFlow**, achieving 80% accuracy in predicting spinal abnormalities such as disc herniation, narrowing, and Pfirrmann grade
- Assisted in training a U-Net segmentation model to partition spinal MRI scans into individual intervertebral discs, enabling more precise feature extraction
- Developed components of the full-stack web application using **Flask** (backend API) and **React** (frontend) to deliver model predictions through an interactive interface.

League of Trivia | Visit | GitHub | *React, Node.js, Express, PostgreSQL, AWS* Oct. 2025 - Nov. 2025

- Developed League of Trivia, an interactive full-stack trivia game based on the game League of Legends, featuring multiple categories and difficulty levels.
- Built a responsive **React** frontend and a **Node.js/Express** REST API that dynamically generates unique questions using randomized logic and SQL queries.
- Designed and implemented a **PostgreSQL** database containing structured information on characters, professional esports players, and in-game equipment, optimized for flexible and efficient question retrieval.
- Deployed the full application using **AWS S3 + CloudFront** for the frontend and **AWS EC2 + RDS** for the backend, creating a fully hosted, production-ready web experience.

Dining Philosophers | Github | *C++, Threads Library* March 2025

- Implemented the classic Dining Philosophers problem using **Peterson's algorithm** to enforce mutual exclusion without relying on built-in mutexes.
- Modeled each philosopher as an independent thread and coordinated access to shared resources while avoiding deadlock and starvation.
- Designed both **coarse-grain** and **fine-grain** synchronization variants to demonstrate different approaches to concurrency control.