Andrew D. Leach

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Education

Texas A&M University - College Station GPA: **3.93/4.0**

Bachelor of Science in Computer Science *Expected May 2025*

- CSE Honors under Craig & Galen Brown Honors Engineering Program - 10% of graduating class admitted.
- Research assistant under Dr. Shinjiro Sueda, optimizing physics-based simulation through CUDA parallelization.
- Actively developing undergraduate thesis on "Efficient Parallelization of Stacking Rigid Bodies on the GPU" as a part of the Undergraduate Research Scholars program.

Experience

Software Engineer Intern June - August 2024

J.P. Morgan Chase & Co.

- Engineered virtual assistant to resolve 74% of support tickets that end up as well documented yet frequently recurring questions while avoiding unnecessary live intervention.
- Performed real-time scraping of information across relevant documentation with non-relational database to efficiently store and retrieve responses on user query. Packaged and exported for LOB-wide usage.
- Integrated natural language processing and reinforcement learning concepts using NLTK + WordNet to determine user intent. Determined optimal results with TFIDF and cosine similarity scoring algorithm, and user feedback.

Lead Teaching Assistant - Data Structures & Algorithms Aug 2023 - Present

Texas A&M Department of Computer Science & Engineering

- Maintained and developed C++ testing suite and autograders embraced by faculty, streamlining objective grading process for thousands of students. Collaborated closely with other TAs and faculty to design assignments and exams, communicate student feedback, and contribute to course decision-making.
- Saved TAs on average 60 hours of work; created prompts and objective autograders for 3 FRQ's semesterly, relieving fellow TAs of manual grading which previously required ∼3-5 minutes per student, for ∼300 students.
- Managed course synchronization for 300+ students across 16 sections; maintained 7 programming assignments with test coverage and documentation; produced material for and ran weekly recitations; held routine office hours.

Projects

J.P. Morgan & Chase Code For Good Hackathon | *Python3, MongoDB, Flask, React + JS, TS* Oct 2023

- Worked alongside the support of six team members and two mentors over 24-hour period to develop solutions for outdated system used by non-profit CanCare Inc, which supports patients throughout their cancer journey.
- Implemented survivor matching system using heuristics like cancer type, age, and experience. Generated test data with Python and Faker for patient records.
- Created AI-based chatbot pretrained on CanCare data to streamline user support process. Produced community forum for users to share anecdotes and milestones, ask questions, etc.

CPU Threaded Ray Tracer | *C++, pthreads* April 2024

- Wrote vanilla C++ ray tracer with support for sphere, ellipsoid, cube, and triangle intersection tests with multi-threading, reflective blinn phong mixtures, and constructive solid geometry.
- Accelerated render time by up to 90.97% with CPU-side multithreading, significantly reducing development time.
- Integrated constructive solid geometry union & difference operators to create more complex scenes with "negative" shapes.

Technical Skills

Programming Languages: C++, CUDA, Python, C, RISC-V, JavaScript, HTML/CSS
Frameworks and Libraries: C++17, OpenGL, GLM, GLSL, PyTorch, scikit-learn, React, SpringBoot
Tools and Platforms: Git, GitHub, BitBucket, WSL, VSCode, Visual Studio, PyCharm, IntelliJ, pip, Maven
Project Management: Agile, JIRA, LaTeX, Markdown, Confluence