Sean Tran

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Education

The University of Texas at Dallas

Bachelors of Science in Physics (in progress) — *2024 – Present*
Major GPA: 3.4

Bachelors of Science in Computer Science — *2019 – 2023*
Major GPA: 3.2

Work Experience

Research Intern – Computational Astrophysics (NSF REU in Physics) — *Richardson, TX*
The University of Texas at Dallas — *Summer 2025*

- Conducted computational research on gravitational wave lensing using Python and Glafic, developing custom simulation pipelines for dynamic control of 20 lensing parameters across 500 galaxy configurations
- Automated analysis of 10,000+ lensing observables, generating 30+ unique plots and applying Bayesian inference to extract statistical correlations between GW magnifications and EM image features
- Built and applied inverse ray-tracing models to calculate 2-4 lensed images per source for 1000+ galaxy translations, enabling high resolution EM-GW localization studies
- Presented findings at UT Dallas SPUR event 2025, winning award among 300+ participants
- Tools Used: *Python (NumPy, SciPy, Astropy, Matplotlib, Plotly), Glafic, Linux, Bash, Jupyter, Git*

Projects

AES Encryption Engine & Visualization Tool

- Restructured the Advanced Encryption Standard symmetric key algorithm recursively to emulate OpenSSL in a more user-friendly environment, resulted in stronger foundation for lectures and future topics
- Employs multi-use functions to increase runtime efficiency while displaying step-by-step breakdown to provide user with better understanding of encryption process
- Tools Used: *Java, Firebase*

Modular Report Generation Tool – Senior Capstone Project (CS)

- Led a team of 4 in developing a program to automate audit report generation for ECS Graduate Advising at UTD, extensively increasing initial process efficiency by 250% and future modifications by an even larger amount
- Created custom data parsing algorithms to handle various data formats and integrated with existing university student files using JSON serialization, ensuring seamless data retrieval and report generation
- Designed and implemented a modular architecture utilizing object-oriented principles, to divide the project into four crucial components, allowing for efficient collaboration, future scalability and streamlining final integration process
- Tools Used: *C#, .NET, Powershell, AWS*

Web-Scraping Weather Utility – HTTP Content Parsing Script

- Employs a variety of text manipulation functions along with a Google search script to transform a single line of web server content into a detailed weather forecast for any given location
- Replaced Linux's default weather function with script that executed from local machine, resulting in a more personal and informative display that functioned with 100% reliability, contrary to the original function's intermittence
- Tools Used: *Linux, Bash, Unix utilities (wget, lynx, grep, sed, awk)*

Technologies

Languages: Java, Python, C++/C/C#, Bash, Javascript, Powershell, SQL, XML, HTML/CSS

Computer Tools: Kali Linux (WSL), Ubuntu, OpenAI, MATLAB, Jupyter, Git, AWS, Firebase, MySQL, TradingView

Work Eligibility: Eligible to work full time in the U.S. with no restrictions