Mark Brubaker

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EDUCATION: **Southern Methodist University**, Lyle School of Engineering — Dallas, TX
Bachelor of Science in Computer Science, Specialization in Cyber Security — May 2023

WORK EXPERIENCE:

Southern Methodist University (SMU) — Dallas, TX
Undergraduate Teaching Assistant — 08/2022 – Present

- Directed weekly lab section of over 20 students and provided help and feedback on projects and assignments
- Coordinated with professor and team of 5 TAs weekly to develop class projects and assess student needs
- Taught hundreds of students computer science concepts via weekly help desk

Electric Reliability Council of Texas (ERCOT) — Austin, TX
Integration Support Services Intern — 05/2022 – 08/2022

- Researched how Power Automate could be used to facilitate transition to Microsoft app suite
- Designed and implemented Power Automate flows to improve integration between Microsoft Teams and other Microsoft apps leading to a more streamlined work experience that cut 15 hours of work per week
- Developed flow that parsed thousands of emails and created alerts for significant and anomalous events
- Presented benefits of Power Automate to executives and developed PowerPoint to train ERCOT managers

Southern Methodist University, AT&T Center for Virtualization — Dallas, TX
Undergraduate Research Assistant — 01/2020 – 05/2022

- Refactored and optimized proof of concept into a testable program that is 100 times more efficient
- Performed extensive testing and created data visualizations using pandas Python library
- Contributed additional testing capabilities to Google's Perfkit Benchmarker

ENGINEERING PROJECTS:

Graph Coloring Optimization Project — Spring 2021

- Constructed a program to create and color graphs with minimal colors to meet exact runtime specifications
- Utilized performance profiling to identify program bottlenecks and make runtime over 100 times faster leading to increased sample collection and more accurate results
- Wrote a 26-page research paper exploring program design choices, proving runtime of algorithms, and explaining how data collected meets expected runtimes based on the analysis

Raytracer — Fall 2021

- Created a CPU based ray tracer with field of view, different materials, shadows, gamma, and reflections
- Designed and implemented a thread pool from scratch to increase speed and improve utilization of resources
- Coded custom implementations of various file types for variable display formats

Boids (Emergent Flocking Behavior) — Spring 2022

- Programmed physics-based simulation to mimic flocking patterns of birds by modelling individual behaviors
- Refactored project to support GPU programming and created a more efficient, custom rendering system
- Built a fully customizable User Interface to enable dynamic changing of parameters

Research Paper Database Search Engine — Spring 2020

- Co-designed a program that uses basic logic operations to find research papers via keywords and/or authors
- Implemented AVL tree to store word frequency data and guarantee faster runtimes
- Program was the fastest running in the class to load files and perform searches

ADDITIONAL INFORMATION:

Skills: C, C++, Python, Cuda, Shell, MySQL, HTML, CSS, JavaScript, Assembly, Git, Bash, Pandas, NumPy, Linux, Agile, Parallel programming, Machine Learning, Software Security, Splunk