Stephen Chen

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EDUCATION

University at Buffalo — August 2017 – May 2021

Major: Aerospace Engineering / Mechanical Engineering BS
GPA: 3.63 / 4.0 *(Dean's List)*
Relevant Coursework: Aerodynamics, Heat Transfer, Fluid Mechanics, Thermodynamics, Engineering Materials, Aerospace Structures

SKILLS

Technical Skills: MATLAB, Python, C/C++, JavaScript, Java, CGAL, Plotly, React, NumPy, SciPy, Bottle, Git, Unix (Ubuntu), SolidWorks, Creo, AutoCAD, Microsoft Office Suite, Autodesk Inventor, LabVIEW, Multisim
Certification: Autodesk Inventor Certified Professional (May 2017)

EXPERIENCE

Simulations of Tethered Space Nets – University at Buffalo; Buffalo, NY — June 2020 – Present
Undergraduate Research

- Performed simulations in C++ using Vortex Studios framework to accurately model space net behavior
- Wrote a program in C++ using CGAL library to compute the Capture Quality Index (CQI) to estimate capture effectiveness in real time during simulation
- Identified potentially dangerous oversight in CQI and provided a suitable solution
- Performed sensitivity study using Monte Carlo simulation model and analyzed data from over a thousand datasets

PROJECTS

Rocket Design and Fly — April 2021

- Wrote program in Python to develop various rocket configurations from a given set of equipment while still meeting mission requirements through an iterative process
- Analyzed designs to determine correlation between equipment selection and theoretical properties of the rocket including max. altitude, max. acceleration, and safety margin
- "Test flew" the rockets in Open Rockets software and performed comparisons between simulated flight and calculated design estimates

Analysis of the Attitude Motion of WMAP Spacecraft — April 2021

- Wrote program in Python to calculate and visualize the scan pattern of the WMAP spacecraft given initial attitude and Euler rates
- Wrote program in Python to numerically integrate quaternion kinematics and Euler rates using a fourth order Runge-Kutta routine
- Designed a controller for the WMAP that allows the spacecraft to align itself with any desired orientation and angular velocity

Simulation Model of Genetic Evolution — March 2021

- Created simulation model in Java using OpenGL to simulate the effects of genetic evolution over time
- Used Pandas and SciPy with Python to analyze over 60,000 data points to investigate trends and patterns
- Used Plotly and Matplotlib to visualize significant findings in a clear and informative manner
- Used Git to collaborate on project to track changes and merges to project