Yifan Xue

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EDUCATION

University of Southern California **GPA: 4.0 / 4.0** August 2018 – May 2022

Bachelor of Science in Mechanical Engineering; Minor in Computer Science

ACADEMIC PROJECTS

BASIC Interpreter (C++) Fall 2019

- Wrote algorithms to translate and execute a subset of coding language BASIC by setting up a class inheritance hierarchy, and building a parse tree.
- Identified and categorized command keywords, variables, numerical expressions and Boolean expressions from input strings.
- Stored and tracked numerical and array variables inside STL maps and implement them based on command keywords identified.

3D-Printing Bridge Competition Fall 2018

**Object: design, construct and test (to failure) a 3D-printing bridge made from Polylactic Acid (PLA).*

- Designed a bridge using Solidworks which was selected by team members to take part in class competition.
- Tested and further modified the bridge using Solidworks stimulation to optimize the amount of weight it could hold.

RESEARCH

Multi-parameter Nonlinear Elasticity Mapping of Breast Masses, USC Spring 2019 – Spring 2020

- Research Assistant at Computation and Data Driven Discovery Group.
- Project director: Dr. Assad Oberai, Hughes Professor and Professor of Aerospace and Mechanical Engineering.
- Calculated heterogeneity of breast tumors' shear modulus by analyzing electrical images of the tumors on Paraview.
- Looked for ways to distinguish benign tumors from malignant ones based on the heterogeneity values generated.
- Organized research data and visualized them into 2D drawings using Matlab.

Ultrasonic Medical Instrument Spring 2020 - Present

- Investigate ultrasonic acoustic streaming in biological media for potential applications in medical technology.
- Built C++ simulation models using Openfoam to predict behaviors of acoustic waves under certain given pressure.

Machine Learning Applications in Bio-medical Technology Summer 2020 - Present

- PI: Anita Penkova, Research Assistant Professor of Aerospace and Mechanical Engineering
- Combine machine learning and data analysis to improve remote surgery technology.

STUDENTS ORGANIZATIONS

SC Solar Car Team, Mechanical Team Lead Fall 2018 - Present

- Took charge of design, assembly and data analysis of the braking system and suspensions.
- Took charge of safety checking and running Solidworks simulations on self-designed vehicle parts including roll cage and safety box.
- Cured carbon fiber layup with a home-made oven under 80 degrees Celsius to build an outer car shell.
- Designed and modified machine parts, such as wheel hubs and the roll cage, using Solidworks.
- Selected and purchased optimal car equipment and components that are affordable to the team, such as wheels and calipers.
- Communicated with the electrical and programming teams to build USC's 1st solar race car and compete at the Formula Sun Grand Prix 2021.

SC Solar Car Team, Strategy (Programming) Sub-team Member Fall 2019 – 2020 Spring

- Wrote codes to read and process raw car data collected from Arduino sensors, including motor temperature and battery voltage.
- Send processed results to the dashboard and driver display using C language.
- Will conduct in-race planning and determine optimal race strategy from data livestream.

WORKING EXPERIENCE

Teaching Assistant at New Oriental Education & Technology Group Inc, Yantai May 2019 – June 2019

- Taught TOEFL, IELTS and other high-level English classes to high school and college students.

Teaching Assistant at GES International Education Group July 2019

- Taught self-driving classes at Peking University Experimental School (Jiaxing).
- Introduced basic Python and AI concepts to middle school students and instructed them to assemble their first Raspberry Pi Car.

SKILLS

- Computer-Aided Design (CAD)
- Solidworks, NX Nastran
- Product Design
- Matlab
- Openfoam, Paraview
- C++, Python, HTML, CSS
- Object Oriented Programming, Algorithm Design, Data Structures
- Technical Writing