Yichao Ma

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SKILLS

- SolidWorks
- CATIA
- MATLAB
- JavaScript, Python
- React, SQL, AWS
- AutoCAD, Fusion 360
- ANSYS, Fluent
- MS word, PPT, Excel

EDUCATION

University College London — **London, UK** — **Sep 2020 – Dec 2021**

Master of Mechanical Engineering

- Gained both analytical and empirical knowledge in mechanical engineering, material/biomaterial engineering, automotive engineering, and control engineering from various.
- Key Modules: Advanced Computer Applications in Engineering; Power Transmission and Auxiliary Machinery System; Vibrations, Acoustics, and Control

University of Windsor — **Windsor, Canada** — **Sep 2016 – Sep 2020**

Bachelor of Applied Science in Mechanical Engineering with Automotive Option

- Won John Carter William Scholarship (Mar 2018)
- Awarded Dean's Honor Roll in recognition of outstanding scholastic achievement by Faculty of Engineering
- Attended William Lowell Putnam Mathematics Competition and ranked first in Windsor and 722 out of 4700 students across North America
- Accomplished a minor in Mathematics
- Key Courses: Vehicle Dynamics; Internal Combustion Engine; Stress Analysis; Computer Aided Design

EXPERIENCE

Web Development with React and AWS-Amplify — **UWCSSA** — **May 2021 – Present**

Full-Stack Developer

- Collaborated with 10 more other university students to develop an open-source customized website for *University of Windsor Chinese Students & Scholar Association* (UWCSSA).
- Gained a substantial amount knowledge in React, AWS-Amplify, Redux, GraphQL, and Material-UI.

ACADEMIC PROJECTS

'Smart' Fuel for High Efficiency Low Emission Combustion — **UCL** — **May 2021 – Sep 2021**

Dissertation

- To *reduce the NO_x and soot formation* in the emission and maintain a *high efficiency* of combustion, a possible approach is to use the '*smart'* fuel whose ignition quality and combustion characteristics can be altered through on-board process. (e.g., exposure to ozone or UV light)
- Conducted literature reviews on biofuel, compared the results and selected *monoterpenes* because of the abundance and suitable reactivity. Performed the thorough combustion simulation via Cantera and utilized Python to generate pressure to crank angle plot and heat release rate analysis. Identified whether the monoterpene is a good candidate of alternative fuel for HCCI and RCCI engines.

Suspension Test Rig Design **UCL** **Jan 2021 – May 2021**

Group Leader

- Conducted literature reviews on previous suspension test rig designs. Came up with a novel suspension test rig for a novel suspension struct with variable stiffness designed by UCL. Design and validate the test rig via SolidWorks and ANSYS. Performed both hand calculation and Simulink simulation for the selection and performance test of the hydraulic actuator.
- Worked as the group leader. Conducted and updated the Gantt chart regularly. Arranged regular meetings between the team members and the supervisor. Summarized the meeting log and prepare the PowerPoint of previous achievements and doubts.
- Concreted the knowledge of project management and significance of safety in engineering design.

Thermoelectric Wearable Phone Charger **University of Windsor** **Jan 2020 – Sep 2020**

Technical Leader

- Conducted literature reviews on the mechanism and limitations of thermoelectric generators (TEGs). Come up with a novel idea utilizing both TEGs and phase change materials (PCMs) as an effective heat sink speeding up the heat transfer rate.
- Conducted complete simulation including the melting process of the PCMs via ANSYS Fluent. Performed mesh convergence test to ensure the reliability of the results. Extracted and analyzed the temperature distribution results. Prepared the final report.
- Applied the knowledge of project management leading to the project success. Understood the significance of teamwork and efficient communication.

Hydrogen Production Research **University of Windsor** **May 2019 – Apr 2020**

Research Assistant

- Conducted literature reviews on the method of producing hydrogen, including steam-gasification of petroleum coke, methanol decomposition, and redox reaction with various metal oxides. Compared the methods in terms of CO_2 emission, energy input requirements, costs, and efficiency of transformation.
- Worked with other members to discuss which method of hydrogen production best suited for Windsor's environment, set the research direction to the utilization of useless heat energy generated from the factory's production (relatively high temperature) to produce hydrogen and reduce CO_2 emission.
- Assisted other members to redesign and assemble the hydrogen fuel cell via CATIA. Gained knowledge and experience how a practical hydrogen fuel works with the proton change membrane.

Electric Vehicle Research **University of Windsor** **Sep 2018 – May 2019**

Research Assistant

- Utilized Fusion 360, CATIA, AutoCAD to redesign the air conditioning cooling system for electric vehicles produced by Ford under the supervision of professional engineers, learned the principle of the basic automotive air conditioning system, and developed the ability to process the experimental data by various analysis methods.
- Supported professional engineers to install and test the new Ford engine, recorded the experimental data and made a brief report.
- Trained according to the Lab Safety Manual and realized the significance of safety in engineering.

3D-Print Mold Design **University of Windsor** **Jan 2018 – Sep 2018**

Research Assistant

- Assisted a PhD student in designing a mold which can wrap the electrical cables as the target company suggested, fabricated the samples used to test various materials.
- Supervised students who aided the research project, maintained records on assignment completion and acted as liaison and mediator between the students and the researcher.
- Got access to all the experimental data for the faculty researcher and supervisor. Prepared and supplied necessary equipment for the project.