Michael Zhang

3B Mechanical Engineering | University of Waterloo

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Skills

CAD/FEA:

Catia V6/3DX
NX/Unigraphics
ANSYS (Icepak, Structural, and ACP)
SolidWorks
Star CCM+

Design Concepts:

GD&T
Surface Modelling
FEA/CFD
Tolerance Analysis
Material Selection

DFMA:

Injection Molding
Casting
CNC machining
FDM/SLS/SLA
Composites
Bulk Deformation
Stamping

Programming:

Python
Java
C++
Matlab

Courses:

Manufacturing
Thermodynamics
Fluid Mechanics
Electromechanical Devices

Experience

Zipline | Structures and Mechanisms Engineering Intern — Jan - Aug 2022

- Owned end-to-end design of power conductors for next-generation vehicle
  - Reduced part mass by over 50%, resulting in projected savings of more than $60 million annually
  - Simplified assembly story to lower cycle times by 30% and decrease EMI effects through greater control of conductor locations
  - Defined targets for ingress protection of conductors and interfaces—derisked lifetime durability with environmental and fatigue testing
  - Performed thermal analysis to optimize for mass and conductivity across a spectrum of nominal and fault flight profiles
- Proposed a novel solution to simplify and mass-down a multi-DoF system, which was selected as PoR, saving over $500/vehicle
- Designed a vibration-isolating camera mount to enable perception system retrofit for preliminary testing
- Fabricated composite parts to inform EI/GJ/mass trades for structural and natural frequency optimization

Lucid Motors | Interior Components and Systems Intern — Sept - Dec 2021

- Developed fixtures to constrain complex-curved A-surface parts to +/- 0.2mm, which enabled a reduction in rework time of over 40%
- Concepted and prototyped mechanical user interfaces, enabling a two-way double-detented HVAC switch to be packaged within a 1cm diameter
- Conducted root cause analysis of manufacturing and fitment issues, then developed and carried out permanent/immediate corrective actions

Multimatic Inc. | Senior Design Engineering Intern — Jan - Apr 2020

- Designed production automotive components, applying DFMA concepts for injection molded (MIM/plastic), CNC machined, welded, and extruded parts
- Enabled an additional degree of freedom in adjustment of damper curve while reducing part count through development of a bespoke check valve
- Performed tolerance analysis for hydraulic valves and product assemblies, utilizing GD&T in drafting for external manufacture

Solar Car Team | Suspension Lead — Dec 2019 - Jun 2020

- Decreased suspension system packaging volume by 25% through exploring and proposing multiple assembly-level architectures
- Performed kinematic analysis to minimize vehicle energy loss through wheel path, spring rate, and damper optimization
- Conducted analysis-driven design of suspension and chassis components to withstand driving loads—used hand calculations to validate simulations