

Michael Zhang

3A Mechanical Engineering | University of Waterloo

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Portfolio: michaelytz.github.io

Skills

CAD/FEA:

NX/Unigraphics
SolidWorks
ANSYS
Catia V5
Star CCM+
SimScale

Design:

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

DFMA:

Injection Molding
Casting
CNC machining
FDM/SLA 3D Printing
Composites
Bulk Deformation

Programming:

Python
Java
C++
VBA
Matlab
VHDL
SQL
HTML/CSS

Courses/Training:

Manufacturing
Thermodynamics
Fluid Mechanics
Electromechanical Devices
GD&T

Experience

Stratodynamics Aviation | Design Technician

January 2021 - April 2021

- Increased aircraft release mechanism reliability by introducing a 4-bar linkage; Utilized over-center properties of the linkage to direct forces away from servo to reduce wear
- Decreased aircraft payload access time by 50% through the introduction of a modular mounting platform
- Modelled airframe using surfaces with curvature continuity up to G3 (primarily G2)
- Lead hardware integration and component packaging; strategically placed radio-transparent materials to accommodate for EMI, radio transmission and structural requirements

Multimatic Inc. | Senior Design Engineer

January 2020 - April 2020

- Design of 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 F-V curve while reducing part count by 66% through development of a bespoke check valve
- Redesigned injection molded plastic part to increase retention force by 20% and reduce rattle in assembly by altering cross section of snap features
- Performed tolerance analysis for hydraulic valves and product assemblies; utilized GD&T in drafting for external manufacture, interfacing with suppliers and clients

Solar Car Team | Suspension Lead

December 2018 - Present

- Decreased suspension system packaging volume by 25% through exploring and proposing multiple assembly-level architectures
- Performed kinematic analysis to minimize energy loss through wheel path, spring rate, and damper optimization
- Analysis driven design (FEA) of suspension lower control arm and vehicle chassis to withstand highway driving load conditions; used mechanics hand calculations to validate simulation data

Side Projects

Carbon Fibre Acoustic Guitar

January 2020 - Present

- Acoustic guitar being made with spread tow fabric, optimized for low frequency response by varying stiffness and shape through nodal and natural frequency analysis

Music Recommendation App

April 2020 - present

- Implementing application to display music suggestions based on user input artists, utilizing the Spotify API, Django framework and Python