

# Michael Zhang

3A Mechanical Engineering | University of Waterloo

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Portfolio: [michaelytz.github.io](https://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
- introduced a modular mounting platform to decrease aircraft payload access time by 50%
- 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