

# Michael Zhang

3A Mechanical Engineering | University of Waterloo

michael.zhang1@uwaterloo.ca

linkedin.com/in/michaelytz

(Portfolio available on following page)

## Skills

**CAD/FEA:** NX, SolidWorks, ANSYS, AutoCAD, Catia V5, Star CCM+, SimScale  
**Concepts:** DFMA, GD&T, Tolerance Stacks, Surface Modelling, OOP, APIs  
**Programming:** Python, Java, C++, VBA, Matlab, VHDL, SQL, HTML/CSS, Git, Scheme (Racket), Django

## 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 all forces away from actuator and into the mechanism body
- Decreased aircraft payload assembly/disassembly 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 and radio transmission requirements without sacrificing structural integrity

### 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 noise levels 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

### Midnight Sun 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 and determine 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