

Resume  
**Yunseok Choi**  
PhD Aerospace Engineering  
UMID: 27496769

**EDUCATION**

**University of Michigan College of Engineering**  
*B.S.E. in Aerospace Engineering, Minor in Computer Science*  
GPA: 3.895/4.000

**Ann Arbor, MI**  
May 2019

*M.S.E. in Aerospace Engineering, Minor in Computer Science*  
GPA: 4.000/4.000

May 2020

**EXPERIENCE**

**University of Michigan PACE Laboratory**  
*Graduate Student Research Assistant*

**Ann Arbor, MI**  
Sept 2019-Current

- Implemented finite rate hydrocarbon fuel (C11-H22) chemistry for the X-51A and X-43
- Designed engine flow-path and combustor for small hypersonic aircraft (X-51A) and solved the challenges involved with fuel mixing and incomplete combustion due to size restrictions
- Implemented two-step combustor chemistry rate calculations to increase the accuracy of the chemistry models for both hydrogen and hydrocarbon fuel

*Undergraduate Researcher*

Feb 2018-Sept 2019

- Developed 3-D Reduced Order Model (ROM) of NASA's REST shaped inlet for MASIV hypersonic propulsion/vehicle design code using operation map generation from CFD data and interpolation techniques
- Reverse engineered the Boeing X-51A to develop a ROM model for flow analysis and control dynamics study using MASIV
- Conducted numerous CFD analysis of the REST inlet for operation map data and the REST-integrated-vehicle to study effects of changing inlet location on vehicle performance
- Developed a GUI for MASIV to increase usability and accessibility of analysis tools to more engineers

**University of Michigan Microdynamics Laboratory**  
*Undergraduate Researcher*

**Ann Arbor, MI**  
April 2017-Feb 2018

- Designed and simulated transformation acoustics metamaterial in water to manipulate and guide acoustic waves using COMSOL Multiphysics with the end goal of cloaking an object in water from acoustic waves (Sonar)
- Designed a custom automated scanning stage for measuring data points in 3d space and implemented a custom MATLAB GUI and code to control and automate the scanning process
- Manufactured the designed metamaterial and tested its effectiveness in acoustic wave manipulation

**PROJECT EXPERIENCE**

**MRacing** (Formula SAE)  
*Engineer*

**Ann Arbor, MI**  
Sept 2015-Aug 2018

- Conducted FEA analysis using Hyperworks on individual drivetrain components to validate the design under loads and ran topology optimization of rear chain sprocket to reduce mass of the component (22% decrease) while maintaining desired stiffness
- Conducted CFD studies using ANSYS Fluent on different components of the car and analyzed data used in optimizing downforce
- Rebuilt the factory engine and transmission with upgraded performance parts and tested the powertrain for performance and reliability

**SKILLS**

*Computer:* Nx, Hyperworks (Optistruct), STAR CCM+, AGI STK (Certified), Solidworks, CATIA V5, ANSYS ICEM & Fluent, Altium Designer, Microsoft Office

*Languages:* C++, MATLAB, Python, Java, C, Korean

*Rapid Prototyping / Other:* University Certified Mill & Lathe Operator, Haas CNC Mill and Lathe, Carpentry, Technical Communications

**ACTIVITIES**

- American Institute of Aeronautics and Astronautics - U of M Student Chapter
- Sigma Gamma Tau - National Aerospace Engineering Honor Society

Sept 2015-present

Dec 2016-present