

# H. G. Wickramarathne

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Mechanical Engineering Undergraduate with an emphasis on Aerospace Engineering at Northern Arizona University. Well experienced in the fields of Aerodynamics, Thermodynamics, Thermal Analysis, Fluid Mechanics, Systems Design, Machine Design, Advanced CAD/CAM and Finite Element Analysis/Computational Fluid Dynamics via ANSYS. Has a strong background in Engineering Research, Innovation and leadership as a current member of ASME, SAE and AIAA and as a founding father and the Leadership Educator of Pi Kappa Alpha Fraternity at NAU. Has a very-high academic proficiency as a triple dean's list inductee. Aspires to be an innovative Design Engineer (*Aircraft/Defense Systems*) in the field of Aerospace Engineering to increase the quality of human life.

## EDUCATION

BS in Mechanical Engineering (*e. Aerospace*)  
BS in Mechanical Engineering (*Transfer*).

(Northern Arizona University, NAU)  
(West Virginia State University, WVU)

Expected BSME Graduation Date: Fall 2021

Current -11/2021  
05/2018

## PROJECT AND WORK EXPERIENCE

### SAE Aero Senior Capstone

Current

- As the **lead testing and manufacturing engineer** for the current SAE Aero (Regular) Capstone at NAU, conducts the R&D of a real-world aircraft with payload carrying capabilities. By analyzing last year's design, the team is optimizing the system for competition flight.
- Conducts research on airfoil design, aerodynamic optimization and flight control systems using OPENVSP, SOLIDWORKS, ANSYS, MATLAB and SIMULINK.

### Heat Equation on a unit square with 0-Dirichlet Boundary Conditions using Fourier Expansion and Numerical Integration for Dr. John M. Neuberger

12/19

- Researched and used Numerical Mathematical Analysis methods mentioned above to conduct a realistic steady state thermal analysis in a boxed and closed environment for Dr. Neuberger as the final project of the Numerical Analysis (*Undergraduate*) course and received highly positive feedback from the Professor for the work conducted per its uniqueness and technicality.

### Machine Screw Design for Dr. Ernesto Penado

05/20

- Worked in a team of two** to research and develop a machine screw for a power screw jack driven by an electric motor that lift a weight of 1.2 tons using a double threaded screw having square threads on SOLIDWORKS with a full CAD package including stress analysis. Met an efficiency standard that's less than 20% with a minimized collar diameter of 60mm and received a top-grade in the class (*ME365*) and positive feedback for the team's performance.

### "Smart-Box" project for Dr. Hesam Mogaddham

12/20

- As the **team lead** of a team of 4, oversaw and participated in the design of a multipurpose, in-home, entertaining exercise device capable of being used for a wide variety of individuals. The design consisted of a unit capable of providing both strength and cardio exercises.
- Conducted a full thermal case-study for multiple insulation material using SOLIDWORKS-Simulation. The overall project was the best team-design and received the maximum grade.

### ABET-Standard ME286 (NAU) Design Competition: Competitive Engineering

11/20

- Worked with a team of 4** to design, prototype and build two final designs that were used in an engineering competition. Applied on-the-fly engineering skills to repair the design during the competition to win 2<sup>nd</sup> place.

### ASME Human Powered Vehicle Competition

08/18

- Assisted the NAU HPV Team** with the R&D and fabrication of the shell structural design. Tested and optimized the braking system using FEA to prevent failure and crack propagation.
- Represented NAU** as a part of the official HPVC team in the ASME-HPV Competition and oversaw trials and conducted brake tests as an ASME official.

### NAU Facility Services – Lock-Shop Employee

12/19

- As a former employee of the NAU Facility Services Lock shop, earned hands on experience with conventional locksmithing, as well as administrative work.

## ACHIEVEMENTS AND HONORS

- HPVC CO-TEAM LEAD**, American Society of Mechanical Engineers
- DEANS LIST**, 2x Northern Arizona University, 1x West Virginia State University
- ME 386-TEAM LEAD**, Northern Arizona University
- SAE AERO: LEAD TESTING AND MANUFACTURING ENGINEER**, Northern Arizona University
- GLOBAL ACHIEVEMENT AWARD(NAU), INTERNATIONAL EXCELLENCE AWARD(NAU), BLACK AND GOLD AWARD(WVU)**

## SKILL SUMMARY

**Applications:** MATLAB, SOLIDWORKS, ANSYS, OPENVSP, Python, MS Office **Lab Skills:** Controlled experimental analysis, Mill/Lathe/Welding

**Industry Skills:** Thermal Analysis, Systems Design, Flow Analysis, Aerodynamic Optimization, FEA, CFD, CAD/CAM, DFMA and FMEA, Stress Analysis, Structural Design, Numerical Computing, Functional Modelling **Soft Skills:** Leadership, Teamwork, Problem Solving, Creativity