

Akiva R. Wernick

EDUCATION:

Graduate:

The Ohio State University, Columbus, OH
Ph.D. Aeronautical and Astronautical Engineering
M.S. Aeronautical and Astronautical Engineering

Ph.D Diploma Received: May 2023
M.S. Diploma Received: Dec 2018

Undergraduate:

The Ohio State University, Columbus, OH
B.S. Aeronautical and Astronautical Engineering
Minor – Entrepreneurship

Graduation Date: May 2014

WORK EXPERIENCE:

Wakiva Engineering – *President/Owner*

November 2025 – Present

- Perform subcontracting work for engineering research and development organizations
- Develop custom physics based numerical solvers for engineering applications
- Run and analyze numerical models and perform geometric design optimizations
- Develop custom codes for geometric design, manipulation, and meshing

CRG Defense – *Research Engineer/Principal Investigator*

January 2023 – November 2025

- Led and managed multiple Phase II and Phase I SBIR projects
- Led software engineer for in-house lattice design optimization tool dubbed LattiSolve
- Pursued SBIR, STTR, and other solicitations
- Performed technical work for awarded projects

HX5 – *CFD Aeroelasticity Support Engineer/Aerospace Engineer*

Jun 2020 – Dec 2020

- Contracted with NASA Glenn through the GEARS contract
- Analyzed the vibrational responses of an SBU rotor under the rotor's design window
- Developed code to assist in the running and analysis of the rotor's vibrational response
- Used the vibrational response to predict the risk of the rotor experiencing flutter

OSU Department of Mechanical and Aerospace Eng. – *Graduate Research Associate*

Aug 2018 – Dec 2019

- Performed blade optimization study for an engine inlet fan under unique conditions
- Performed CFD analysis to model flow through an engine
- Analyzed and made predictions pertaining to the flow fields modeled using CFD
- Developed code used to generate and propagate mesh deformations for geometric design alterations and CFD analysis

OSU Department of Mechanical and Aerospace Eng. – *Graduate Teaching Associate*

Jan 2016 – Apr 2018

- Taught labs for the course titled ME 3870: Measurements and Data Analysis
- Overviewed and assisted students in weekly labs
- Assisted students in a semester long open lab project that must incorporate topics they have learned in the course
- Graded pre and post lab assignments, lab reports, and presentations

NASA Glenn Research Center Space Academy – *Research Associate*

Jun 2015 – Aug 2015

- Designed a high-altitude balloon payload used to collect voltage and current data from solar cells
- Designed and programed a sun tracker to be used to keep the solar cells perpendicular to the sun
- Programmed a custom-made DAQ unit to record the current and voltage data which was read by an Arduino Uno and saved to an SD card
- Analyzed and interpreted the recorded current and voltage data

RESEARCH EXPERIENCE:

Rotor Blade Design Optimization for Boundary Layer Ingesting Fan (Dissertation Work) Sep 2016 – May 2023

- Optimized the design of a fan rotor subject to large distortions caused by the shape of a serpentine inlet
- Developed procedure and code used to predict an optimal rotor design based on a selected base design
- Analyzed and compared flow structures for baseline and optimal rotor designs using CFD

Rotor Deformation Propagation Modeling

Mar 2019 – May 2019

- Developed a code used to propagate structural deformations throughout a blade model used for CFD
- Ensured hub and casing boundaries remain unchanged during deformation propagation
- Formatted deformation files to be read by CFD code utilized by NASA Glenn researchers

High-Altitude Balloon Flight to Demonstrate Performance of Advanced Photovoltaics Jun 2015 – Aug 2015

- Designed payload for photovoltaics technology demonstration flight
- Constructed a prototype to demonstrate functionality of cells and/or small arrays at high altitudes
- Recorded and report performance

PUBLICATIONS:

- Wernick, Akiva R., Jen-Ping Chen, and James Giuliani. "Fan Optimization Under Distorted Boundary Layer Ingesting Flow." *Journal of Turbomachinery*. September 2025, doi: 10.1115/1.4069812
- Wernick, Akiva R., Jen-Ping Chen, and James Giuliani. "Fan Optimization Under Distorted Boundary Layer Ingesting Flow." *Turbo Expo*. Vol. 88872. American Society of Mechanical Engineers, 2025.
- Wernick, Akiva R., and Milind A. Bakhle. "Tail-Cone Thruster Fan Rotor Flutter Analysis," NASA Glenn Research Center, December 2023, NASA/TM-20230015316
- Wernick, A., Chen, JP. "A Blade Altering Toolbox for Automating Rotor Design Optimization," *Commun. Appl. Math. Comput.*, July 2023. <https://doi.org/10.1007/s42967-023-00288-4>
- Wernick, A. R., Chen, J. P., and Giuliani, J. E., "Design Optimization of a Fan Blade under Boundary Layer Ingestion Flow," AIAA Technical Paper, AIAA SciTech Forum, Jan. 2023. doi: 10.2514/6.2023-0503
- Wernick, A. R., and Chen, J. P., "Rotor Blade Design Optimization for Boundary Layer Ingesting Inlet Fan," AIAA Technical Paper, AIAA SciTech Forum, Jan. 2020. doi: 10.2514/6.2020-0131

REVIEWER:

- Aerospace Science and Technology (Journal) Jan 2022

PRESENTATIONS:

- "Fan Optimization Under Distorted Boundary Layer Ingesting Flow." Technical Paper, Turbomachinery Technical Conference & Exposition, Memphis, TN, June 16-20, 2025.
- "Aeromechanic Analysis and Optimization of Boundary Layer Ingestion Turbomachinery," Presenter at the SVC Meeting, Columbus, OH, March 23-24, 2023.
- "Design Optimization of a Fan Blade under Boundary Layer Ingestion Flow," AIAA paper, AIAA SciTech Forum, National Harbor, MD, January 23-27, 2023.
- "Aeromechanic Analysis and Optimization of Boundary Layer Ingestion Turbomachinery," Presenter at the SVC Meeting, Columbus, OH, September 29-30, 2022.
- "Aeromechanic Analysis and Optimization of Boundary Layer Ingestion Turbomachinery," Poster session presented at the SVC Meeting, Columbus, OH, March 24-25, 2022.
- "Aeromechanic Analysis and Optimization of Boundary Layer Ingestion Turbomachinery," Poster session presented at the SVC Meeting, Columbus, OH, September 9-10, 2021.
- "Rotor Blade Design Optimization for Boundary Layer Ingesting Inlet Fan," AIAA paper, AIAA SciTech Forum, Orlando, FL, January 6-10, 2020.
- "Aeromechanic Analysis and Optimization of Boundary Layer Ingestion Turbomachinery," Poster session presented at the SVC Meeting, Columbus, OH, September 19-20, 2019.
- "Aeromechanic Analysis and Optimization of Boundary Layer Ingestion Turbomachinery," Poster session presented at the SVC Meeting, Columbus, OH, March 28-29, 2019.

PERSONAL PROJECTS:

- Transport Equation Solver – Programmed a numerical solver to solve the generic 2D transport equation for complex structured grids with multiple boundary conditions and parallel-processing capabilities
- Tensor Approach to Geometric Design Optimization – Analyzing the benefits of design optimization using tensor properties as design variables
- Blade Altering Toolbox – Developed a code designed to twist and stretch a given blade geometry

UNDERGRADUATE SENIOR PROJECTS:

- Jet Fighter – Designed a full-size jet fighter aircraft to replace the F-35
- Improved Flying Disc – Researched the effects of dimples on the performance of a flying disc

TECHNICAL EXPERIENCE:

- SolidWorks, Autodesk Inventor, TURBO, Ansys Software, STAR-CCM+, LabVIEW, Pointwise
- C++, C, C#, Python, MATLAB, Fortran, HTML, Java, JavaScript, ActionScript, Flutter
- Microsoft Office, Microsoft Visual Studio, Mathematica, Maple
- Adobe Acrobat, Dreamweaver, Encore, Photoshop, Premiere Pro

VOLUNTEER WORK:

- Discovery Career Pathways July, 2025 – Present
- YLD & TOV May, 2025 – Present
 - Reduce Waste Chicago Aug 9, 2026
 - Chicago Park District July 13, 2025, July 12, 2026
 - Share Our Space May 28, 2025