

Joshua David Eckels

5500 Wabash Ave CM926 | Terre Haute, IN 47803 | (812) 453-1974
eckelsjd@rose-hulman.edu | <https://github.com/eckelsjd/portfolio>

Education:	B.S. Mechanical Engineering Rose-Hulman Institute of Technology Terre Haute, IN 47803 GPA 3.98/4.0 ▪ Minors: Aerospace engineering, Thermal fluids, Computer Science, Music ▪ Coursework: Propulsion, Thermodynamics, Materials, Aerodynamics, Controls, Fluids Computational Fluid Dynamics, Numerical Simulation, Data Structures	2017-2021
Research experience:	Los Alamos Dynamics Undergraduate Researcher Los Alamos National Laboratory, Los Alamos, NM 87545 ▪ Performed ultrasonic wavefield imaging on components for non-destructive evaluation ▪ Improved performance and processing time of acoustic wavenumber spectroscopy by training a convolutional neural network to recognize defects in plate-like structures ▪ Integrated ANSYS, MATLAB, and deep learning workflow with Python automation Assistive Robotics Lab Undergraduate Researcher Virginia Tech, Blacksburg, VA 24061 ▪ Investigated and classified navigation constraints and barriers for autonomous vehicles ▪ Integrated with existing SLAM and convolutional neural networks for robotic navigation ▪ Utilized computer vision to identify and localize barriers in a 3D point cloud map CS Educational Research Undergraduate Researcher Rose-Hulman, Terre Haute, IN 47803 ▪ Identified misunderstandings of computer science students when reasoning about code ▪ Analyzed data patterns to develop an online reasoning tutor to aid in student code tracing ▪ Automated the collection of data from students' problem-solving approaches	2020-ongoing June-Aug 2019 2019-ongoing
Software skills:	▪ Siemens STAR-CCM+ Experience in 2D and 3D flow visualization and CFD ▪ ANSYS Mech, Fluent Proficient in ANSYS workbench tools and Python scripting ▪ MATLAB Proficient in numerical analysis and system modeling ▪ BS SOLIDWORKS Intermediate CAD and stress/motion analysis experience ▪ OpenCV, ROS, Fast.ai Intermediate in machine learning and conv neural networks ▪ Cloud computing Remote deep learning virtual machine with GPU acceleration ▪ Languages Proficient in Java, Python, C, Linux and shell scripting	
Honors:	▪ Barry Goldwater research scholarship nomination ▪ Heminway Bronze medal for top of undergraduate class ▪ Rose-Hulman Dean's List 9/9 quarters ▪ Tau Beta Pi engineering honor society and community involvement	2019 2019 2017-present 2018-present
Conferences:	International Modal Analysis Conference (IMAC) Orlando, FL 32819 ▪ (In progress, submitted) J.D. Eckels, I.F. Fernandez, K. Ho, N. Dervillis, E.M. Jacobson, and A.J. Wachtor, "Application of a U-Net Convolutional Neural Network to Ultrasonic Wavefield Measurements for Defect Characterization," presented at the 39 th Int. Modal Analysis Conf. (IMAC), Orlando, FL, USA, Feb. 8-11, 2020	Feb 2021

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Publications: (In progress) J.D. Eckels, I.F. Fernandez, K. Ho, N. Dervillis, E.M. Jacobson, and A.J. Wachtor, “Application of a U-Net Convolutional Neural Network to Ultrasonic Wavefield Measurements for Defect Characterization”

References: *Dr. James Mayhew*
Professor of Mechanical Engineering
Rose-Hulman Institute of Technology
5500 Wabash Ave, Terre Haute, IN 47803
mayhew@rose-hulman.edu
+1 (812) 877-8917

Dr. Michael Moorhead
Professor of Mechanical Engineering
Rose-Hulman Institute of Technology
5500 Wabash Ave, Terre Haute, IN 47803
moorhead@rose-hulman.edu
+1 (812) 877-8829

Dr. Adam J. Wachtor
Postdoc and LANL project mentor
Los Alamos National Laboratory
Los Alamos, NM 87545
ajw@lanl.gov
+1 (815) 922-2747

Dr. Aimee Cloutier
Assistant Professor of Mechanical Engineering
Rose-Hulman Institute of Technology
5500 Wabash Ave, Terre Haute, IN 47803
cloutier@rose-hulman.edu
+1 (812) 877-8879

Dr. Jan Helge Bøhn
Associate Professor of Mechanical Engineering
Virginia Polytechnic Institute and State University
114H Randolph Hall, 460 Turner St., Blacksburg, VA 24061
bohn@vt.edu
+1 (540) 231-3276

Dr. Erica M. Jacobson
Postdoc and LANL project mentor
Los Alamos National Laboratory
Los Alamos, NM 87545
ejacobson@lanl.gov
+1 (734) 645-9263
