Joshua David Eckels

5500 Wabash Ave, Box 926 | Terre Haute, IN 47803 | (812) 453-1974 | eckelsjd@rose-hulman.edu

Education : **Bachelor of Science, Mechanical Engineering GPA 3.98/4.0** **Aug 2017 – May 2021**

Rose-Hulman Institute of Technology, Terre Haute, IN 47803

- Minors: Computer science, Aerospace engineering
- Courses: Thermodynamics, Fluids, Propulsion, Statics, Materials, Dynamics, Programming, Data structures, Computer architecture
- Leadership/involvement: Grand prix engineering (GPE), Maker lab, Design Build Fly (DBF), Chorus, Chamber, Acappella (president), Tau Beta Pi

Experience : **REU at Virginia Tech**, Blacksburg, VA 24061 **June 2019 – Aug 2019**

Researcher – 40 hr / week

- Research Experience for Undergraduates (REU) in Automotive Engineering
- Accessibility constraint mapping for on-road, off-road, indoor autonomous transit/delivery
- Investigated and classified navigation constraints and barriers for autonomous vehicles
- Utilized Robotic Operating System (ROS) and computer vision (OpenCV) software to identify and localize barriers/constraints in a 3D global mapping framework
- Integrated with existing Simultaneous Localization and Mapping (SLAM) and convolutional neural networks (CNNs) software for robotic navigation

Metronet Inc., 3701 Communications Way, Evansville, IN 47715 **June 2018 – Aug 2018**

Design Intern – 40 hr / week

- Updated and maintained company as-built fiber designs utilizing GIS software
- Revised and performed quality control on over 100 outsourced fiber network designs
- Generated 10 fiber network construction drawings and bills of materials for new markets
- Compiled and documented a 50-page procedure manual

AskRose Homework Help, 5500 Wabash Ave, Terre Haute, IN 47803 **Aug 2017 – present**

Tutor – 4 hr / week

- Advised and strengthened students in their learning and homework
- Utilized various media resources to communicate problem-solving strategies

Various parks and recreational centers, Evansville, IN 47715 **2016 – present**

Lifeguard – 30 hr / week

- Supervised and accounted for well-being of all patrons
- Maintained pool deck and accommodated manager's needs

Projects : **Thermofluids – Turbojet analysis** **March 2019**

- Utilized Matlab to model inlet/outlet properties of turbojet/turbofan engines
- Optimized engine design utilizing cycle analysis

MIPS – Computer processor **Feb 2019**

- Designed and implemented a 16-bit assembly language
- Executed a relative prime algorithm in 1.8 ms.
- Designed a processor capable of 87.6 Mhz clock speed

- Developed extensive test benches in Verilog

Matlab – Simulink optimization **Jan 2019**
- Utilized Simulink to model physical systems and analyze experimental data
- Optimized residual swing velocity of a dynamic crane-pendulum apparatus

Java – Software development **Sept 2018**
- Utilized software engineering principles to design a computer application
- Implemented Java classes utilizing UML, polymorphism, interfaces, Java-swing GUI

Design – Product improvement **April 2018**
- Innovated product design using CAD software and reverse engineering techniques
- Compiled and documented detail drawings and bill of material for new product

Python – Robotics **Feb 2018**
- Implemented Python classes for remote robot functionality
- Leveraged Python graphics and shell scripting for robotic control and navigation

Statics – Strength analysis **Oct 2017**
- Analyzed stress and strain relationships in a static crane system
- Optimized cost and weight of linkage system based on material properties

Fabrication – Design and construction **July 2017**
- Utilized CAD software to design and model a chair assembly
- Demonstrated proficiency in shop environment utilizing various shop machinery

Skills :

Computer skills
- Python, Java, C, C++
- Matlab, Simulink, Maple
- Solidworks, AutoCAD, Inventor
- MIPS assembly, Verilog, Xilinx
- Geographical information systems (3-GIS)
- Linux, Ubuntu, Windows, Shell scripting and automation, Git
- Computer vision (OpenCV), Convolutional neural networks (Keras, TensorFlow)
- Robotic Operating System (ROS), Simultaneous Localization and Mapping (SLAM)

Other skills/interests
- Gas metal arc welding (GMARC)
- Shop equipment (mills, lathes, saws, CNC, etc.)
- Computational fluid dynamics (CFD), Finite element analysis (FEA)

Activities:

Extracurricular
- President – Acappella club
- Director – Chamber choir
- Secretary – Chorus
- Pianist – Pit orchestra
- Member – Grand prix engineering (GPE) team
- Member – Maker lab
- Member – Design build fly (DBF) team

Honors

- Tau Beta Pi engineering honor society
- Rose-Hulman Dean's list

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

Mr. Hani Awni
Biotechnologist and Software Engineer
Virginia Polytechnic Institute and State University
14105 Edgewater Ct., Libertyville, IL 60048
hani.awni@gmail.com
+1 (224) 715-5995

Dr. Jan Helge Bøhn
Associate Professor of Mechanical Engineering
Virginia Polytechnic Institute and State University
114H Randolph Hall – 0710, 460 Turner St., Blacksburg, VA 24061
bohn@vt.edu
+1 (540) 231-3276