

# Jackson Hellmers

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## EDUCATION

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### Master of Science in Electrical Engineering

University of Wisconsin-Madison

GPA: Undetermined

Sep 2021 - Present

### Bachelor of Science in Electrical and Computer Engineering

University of Wisconsin-Madison

GPA: 3.95/4.00

Sep 2017 - May 2021

**Highlighted Coursework:** Graduate Machine Learning, Artificial Intelligence, Neural Networks, Image Processing, Computer Vision, Probabilistic Modeling, Signal Processing

## PROGRAMMING SKILLS

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**Languages:** Python, Java, C/C++, MATLAB, SQL

**Machine Learning Libraries:** Tensorflow, PyTorch, Keras, Scikit-learn, Numpy, Pandas, Matplotlib, OpenCV

## WORK EXPERIENCE

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### Electrical Engineer Intern, Innovative Signal Analysis, *Richardson, TX*

May 2021 - Aug 2021

- Programmed Xilinx UltraScale RFSoc boards using Vivado Design Suite and Vitis IDE.
- Generated bare metal applications to benchmark Real-time Computing cores.
- Designed Verilog modules to measure latency between a system's CPU and FPGA.
- Created PCBs to measure the power draw of various components using fixed-voltage supply and current sense ICs.

### Design Verification Test Engineer, Extreme Engineering Solutions, *Madison, WI*

Jan 2020 - Sep 2020

- Worked with high-bandwidth (50 GHz) oscilloscopes to verify clock and data signal functionality
- Constructed and improved PCB designs to adjust clock slew rates and power supply switching speeds.
- Recorded daily activities and software adjustments through online tickets and version control applications.
- Documented verification tests measuring the compliance of numerous I/O interfaces such as USB 3.0, 100 Gig Ethernet and PCIe 4.0.

### Systems Development Intern, Exact Sciences, *Madison, WI*

May 2019 - Dec 2019

- Designed and prototyped simple DC motor control and voltage regulation circuits.
- Developed and ran autonomous data-driven C++ programs on Arduino boards and Python programs on Raspberry Pi boards.
- Followed wiring diagrams and guidelines to assemble industrial sized automated systems.

## PROJECTS

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### Digit Recognition, Personal Project

- Used **Scikit-learn** and **Tensorflow** python libraries to create numerous digit recognition models (KNN, Naive Bayes, CNN).
- Uploaded the most successful model to Kaggle's MNIST Classification Challenge and was placed in top 5%.

### Playing Card Identifier, Personal Project

- Created a CNN to properly identify the value and suit of a playing card within an image.
- Used the Image Augmentation library in **Keras** to generate a large set of training images from a small set of actual images and prevent overfitting.
- Created training and testing datasets from scratch and preprocessed images using **OpenCV**.

### CS760 Final Project - DeVise, Academic Project

- Inspired by and adapted from **Google Research Paper: DeVise - A Deep Visual-Semantic Model**
- Combined a trained visual model with an embedded semantic model to allow for classification of unsupervised image labels by taking advantage of contextual similarity.

### ECE539 Final Project - Image Supersampling, Academic Project

- Compared State-of-the-Art CNN and GAN models to evaluate the advantages of each model.
- Created own supersampling CNN that outperforms general upscaling methods such as bicubic interpolation and gaussian denoising.

## LEADERSHIP

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Academic Chair, Theta Tau Professional Co-Ed Fraternity, 2020

High School Math & Science Tutor, Madison West High School, 2019