

Jacob Honer

Phone: 248-773-9213 Email: honerja1@msu.edu

Website: jacobhoner.com
Address: Northville, 48167, MI

EDUCATION:

Michigan State University | East Lansing, MI
Ph.D. in Electrical and Computer Engineering (ultrasound focus)

Graduation: **2027** | Graduate GPA: **3.916/4.0**

Michigan State University | East Lansing, MI
Bachelor of Science in Electrical Engineering + Minor in Spanish

Graduated: **2022** | Undergraduate GPA: **3.96/4.0**

RESEARCH EXPERIENCE:

Research Assistant | East Lansing, MI

January 10, 2022 – Present

- Accelerated FOCUS (www.egr.msu.edu/~fultras-web/) through C++, OpenMP, Mex, and CUDA programming.
- Ensured cross-compatibility of FOCUS for Mac, Windows, and Linux operating systems, resolved memory leaks, handled general bug fixes, and managed lab websites.
- Created general purpose scripts for B-mode imaging and plane wave imaging simulations in FOCUS.
- Wrote OpenMP/MPI/CUDA code using HPC systems to solve numerical models and differential equations.

Professorial Assistant at GENISMA | East Lansing, MI

June 5, 2019 – May 6, 2022

- Advanced research through assisting in data collection tasks, creating visualization tools, and directly working on the mathematical formulas and analyses of the company's machine-learning algorithms.
- Published to the 2020 IOTSMS Conference as a first author, sharing on the design and construction of a 3D content sharing platform, to the 2020 ICDL Conference as second author, for contributions to the visualization of neural networks used for Fast Developmental Stereo-Disparity Detectors on an Android phone, to the 2021 IJCNN as second author, for the design of multi-sensory and multi-teaching modalities in developmental learning, and to the Mid-SURE research conference, as a joint first author, discussing new teaching modalities for machine-learning algorithms in addition to contributions to developmental stereo vision using AI.

Professorial Assistant | East Lansing, MI

September 1, 2018 – April 26, 2019

- Helped to develop new techniques for the synthesis of nanostructures and other micro technologies, particularly related to gold, with the Plasmas and Nanomaterials Laboratory at Michigan State University.
 - Prepared samples for various tests, as well as cleaned and maintained reactors.
 - Aided in the construction of a small reactor for gold nanoparticle deposition at atmospheric pressure.
 - Designed 3D printed parts for specialized projects and assisted in project assembly for various tasks.
-

PUBLICATIONS:

2023 Proceedings of Meetings on Acoustics | 1st Author

- Published "Serial and parallel implementations of the fast nearfield methods for continuous-wave and transient pressure calculations," a paper that discusses efforts to parallelize continuous-wave and transient pressure field calculations using OpenMP and CUDA within FOCUS, the "Fast Object-oriented C++ Simulator" (<https://www.egr.msu.edu/~fultras-web/>).

2021 International Joint Conference on Neural Networks (IJCNN) | 2nd Author

- Published "Optimal Developmental Learning for Multi-Sensory and Multi-Teaching Modalities," a paper that introduces a new approach to developmental learning that utilizes multiple sensors at once in the developmental learning process. This paper also introduces a new multifaceted reinforcement approach to developmental learning algorithms, backed by experimental real-time collected data.

2020 International Conference on Developmental Learning (IDCL) | 2nd Author

- Published "Developmental Stereo-Disparity Detectors," a paper that discusses the utilization of GENISAMA's Developmental Network (DN) machine-learning algorithm in stereo-disparity detection tasks. This paper also as presented two new novel mechanisms of the DN that improves the algorithm efficiency and ability to handle noise.

- Published “User Flagging for Posts at 3DTube.org: the First Social Platform for 3D-Exclusive Content” which summarized a new approach to content flagging on GENISAMA’s 3DTube platform that I had worked extensively on the previous summer in the areas of design and hosting.

2021 Mid-Michigan Symposium for Undergraduate Research Experiences (Mid-SURE) | Joint 1st Author

Two Posters:

- Presented “Developmental Stereo Vision,” sharing on findings of using developmental learning for disparity detection tasks conjoined with navigation tasks, all using the same developmental program.
- Presented “Developmental Robot Learning through Multiple Teaching Modes,” where we discussed how our Multi-Teaching Modalities improved our developmental algorithms performance on disparity detection and navigation tasks.

WORK EXPERIENCE:

Assistant Manager at GENISAMA | East Lansing, MI

June 5, 2019 – May 6, 2022

- Recruited and managed short term independent contractors to assist in company operations.
- Led team meetings, company hiring, as well as managed employees, helping with their planning, designing, and even coding when necessary.
- Worked to maintain a forward thinking and focused company vision, through periodic vision presentations, consistent communication with employees, and by congratulating and celebrating progress.
- Continued with role as an Engineering Technician and Professorial Assistant, in addition to managerial responsibilities.

Engineering Technician at GENISAMA | East Lansing, MI

June 5, 2019 – May 6, 2022

- Worked 40 hours a week during the summer, and 10 hours a week during the school year, collaborating with and coordinating employees from America, Vietnam, and China.
- Acquired knowledge of conventional AI methods and the GENISAMA Developmental Network (a general-purpose machine-learning algorithm), applying such knowledge to company projects and other AI related tasks.
- Developed from scratch AOS, the proprietary visualization tool of the GENISAMA DN that allows for batch data training, testing, and reinforcing, in an intuitive and efficient interface.
- Organized the operations of the GENISAMA DN through an easy-to-understand, intuitive class, featuring auto initialization and a minimalistic setup, contributing greatly to the DN’s general-purpose nature.
- Debugged and advanced 3DEye, a disparity detection software by GENISAMA, making it bug-free and useful for not only real-time testing, but pseudo-real-time testing thorough real-time data collection followed by batch supervision, reinforcement, and testing.
- Designed the controlling circuitry of the GENISAMA robot car which, controlled by the DN, tested the DN’s real-time learning on real-world data.
- Implemented GPS navigation and real-world mapping of the robot car, plotting current location and desired locations in a seamless and intuitive interface on Android.
- Prepared online platforms for initial sales of the company’s first consumer products through use of JavaScript, HTML, CSS, the Bootstrap CSS framework, and PayPal, for website development.

Michigan Certified Soccer Referee | Metro Detroit Area

March 2017 – June 2017

- Worked up to 6 days a week, covering 3 total tournaments in 4 months’ time.
- Dealt with players, coaches, and parents, displaying communication skills and character through healthy interactions.
- Created a healthy, competitive, and fair atmosphere for young players to develop and learn.

SKILLS:

- Proficient in C, C++, MATLAB, Mex, and CUDA.
- Proficient in Java and Android Development
- Working knowledge in Cadence Virtuoso, Keil µVision IDE, and ARM programming language
- Proficient in PSPICE
- Proficient in Advanced Design System by Keysight Technologies for RF related circuit design
- Proficient in soldering and basic circuitry
- Working knowledge in CAD (Autodesk Inventor / Fusion 360)
- Working knowledge in HTML, CSS, JavaScript, PHP.
- Working knowledge in Flutter and Dart
- Limited knowledge in Amazon Web Services (AWS)
- Proficient in video editing on Final Cut Pro
- Advanced Spanish speaker

NOTABLE GRADUATE COURSEWORK:

- Analysis of Stochastic Systems
- Advanced Electromagnetic Fields and Waves I

NOTABLE UNDERGRADUATE COURSEWORK:

- Microprocessors & Digital Systems
- Circuits and Systems, I, II & III
- RF Electronic Circuits
- Electromagnetic Fields and Waves
- Control Systems, Digital Control
- Signal Processing, Digital Signal Processing
- Communication Systems
- Computer Aided Manufacturing
- Electro-Optics
- Acoustics
- Digital Logic Fundamentals
- Programming in C

VOLUNTEERING AND LIFE EXPERIENCES:

Mentor with University Christian Outreach at Michigan State | East Lansing, MI August 2023 – Present

- Meet bi-weekly with two undergraduate students for one-on-one mentorship.
- Co-lead a bi-weekly discussion group of four undergraduate students, facilitating discussions about leadership, service, and living a good life.
- Attend bi-weekly dinners with 20+ students, promoting good conversations over a meal, followed by a talk that aims to form students on how to live better in all areas of life.

Co-founder and tutor for Pandemic Tutoring Services | East Lansing, MI September 2020 – April 2021

- Facilitated and helped organize a student run club that offered free tutoring services to local Lansing students during the Covid-19 pandemic.
- Tutored different STEM topics once a week over Zoom with various Lansing students.
- Collaborated with other students about schedule and worked with parents to organize tutoring sessions.
- Recruited other student tutors to help in tutoring services.

Organizer and Leader of Alpha Courses at Michigan State | East Lansing, MI January 2021 – December 2021

- Organized weekly sessions where students could have a safe space to talk about life's big questions and challenges.
- Led small discussion groups and facilitated conversations amongst students.

Church facilitator and volunteer | Farmington Hills, MI September 2014 – June 2018

- Led a small group in a program with over one hundred confirmation students once a week after school to help students transition into high school through dialogues and offering social support and guidance.
- Participated in two, weeklong work camps in impoverished cities, in Pennsylvania and Virginia.
- Attended monthly youth group meetings with an emphasis on volunteering.

Study Abroad Student | Valencia, Spain January 8, 2020 – April 30, 2020

- Studied higher level Spanish, conversed with native speakers, lived abroad, and adapted to a new culture.
-