

Joshua Max Manela

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EDUCATION

Michigan Technological University

Fall 2011 - Spring 2016

Graduated Magna Cum Laude BS Computer Engineering with a Minor in Computer Science, GPA: 3.74

WORK EXPERIENCE

Senior Software Engineer, Special Projects (Perception), Argo AI

March 2017 - Present

- Vehicle Autonomy development with a strong focus on applied computer vision for object perception.
- Architected and implemented a large portion of a real-time image segmentation system on limited compute.
- Implement hardware-level camera and lidar drivers which cross all levels of the stack.
- Designed and implemented Gaussian Process based ground surface segmentation with cm-level precision.
- Optimize computer vision primitives to run faster than existing libraries (such as point projection in OpenCV).

Software Engineer, Machine Learning and Prediction, Uber Advanced Technology Group (ATG)

May 2016 - March 2017

- Developed novel machine learning algorithms for teams throughout the organization.
- Wrote real-time visualizations for on-car debugging of machine learning algorithms.
- Architected and wrote algorithms for long-horizon actor prediction.
- Interviewed engineers for machine learning and software engineering positions.

Hardware Validation Engineering Intern, Facebook

Summer of 2015

- Designed and tested Wedge Top of Rack and network "Six Pack" switches while contributing to the Open Compute Project.
- Wrote custom libraries to interface with the switches and running various network tests.
- Developed stress tests for the network switches.
- Optimized various operations throughout Facebook data centers.

Software Development Engineering Intern, Amazon

August 2014 - November 2014

- Thorough preparation of software design with rigorous agile-centered design evaluations.
- Implemented RESTful APIs interfacing with a NoSQL database.

Resident Assistant, Michigan Technological University

August 2013 - May 2014

- Monitored the dormitories and respond to both casual and crisis situations.
- Was in charge of over 30 residents, many of which were international students.
- Planned fun and educational events and programs for the residents to get to know each other.

Software and Controls Engineering Co-op, Mercury Marine

January 2013 - August 2013

- Extensively used MatLab and Simulink to write Engine Controller Unit (ECU) code.
- Soldered, crimped, designed, and built engine harness for production and test designs.
- Wrote CAN, RFID, and IO libraries in C for an ATMEL AT90CAN128 processor to be used in security applications.

Simulation Engineering Intern, Applied Manufacturing Technologies

Summer 2012

- Laid out and simulated industrial robot performance using the Delmia I-GRIP CAD/Sim Package.
- Collaborated with other Simulation Engineers and wrote macros to improve CAD and simulation speed.

Lead Instructor, The Robot Garage

Summer 2011, 2012

- Wrote K-12 curriculum and led robotics classes and camps for the robot garage.
- Focused on the integration of mechanical and software design.
- Created the "Sumo Bot" stand-alone customizable robotics system still in use today.

Software Engineer, User Friendly EMR (Electronic Medical Record)

August 2013 - April 2014

- Developed various modules for an Electronic Medical Record system with the intent of organizing patient data.
- Designed a module to store employee signatures and credit card information in a mySQL database.

ACADEMIC EXPERIENCE

Undergraduate Researcher, Michigan Technological University

September 2013 - April 2016

- Designed and fabricated peripheral hardware kit for a robotic quadcopter to survey highways and bridges.
- Reconstructed a real-life bridge after having been flown over by a drone SLAM algorithms.
- Researched PSO (Particle Swarm Optimization) variants and wrote a paper on a meta-optimization for PSO.

Intro to Computer Science TA and Learning Center Coach, Michigan Technological University

May 2015 - May 2016

- Work with students one-on-one during lab and guiding them through activities.
- Occasionally lecture in lab to help teach students simple programming concepts.
- Help students with various assignments as needed.

Electrical and Computer Engineering (ECE) Learning Center Coach, Michigan Technological University

May 2015 - May 2016

- Work with students of all majors and tutor them in electrical and computer engineering concepts.
- Tutored for a variety of courses related to circuits, signal processing, electronics, linear systems, and any other courses taught by the ECE department at Michigan Tech.

Student Research Assistant, University of Miami

Summer of 2010

- Wrote software to analyze the radial dimensions of arteries with from an ultrasound machine.
- Participated and helped analyze information for heart-rate and stress testing.

PUBLICATIONS

G. Yang, J. Manela, M. Happold, D. Ramanan. Hierarchical Deep Stereo for High Res Imagery. Submitted, Computer Vision and Pattern Recognition Conference 2019 (CVPR)

J. Manela and T.C. Havens. Histogram particle swarm optimization (HistPSO): evolving non-parametric acceleration distributions. Accepted, IEEE Conf. Evolutionary Computation

H. Deilamsalehy, J. Manela, and T.C. Havens. Heterogeneous Multi-Sensor Fusion for Mobile Platform 3D Pose Estimation. Accepted, ASME Journal of Dynamic Systems, Measurement and Control

Volunteer Work

FIRST Robotics Mentor, FIRST Robotics Teams 27, 2194, and 2586

2011 - 2015

- Mentored three different high-school and two different middle school robotics teams.
- Taught students the basic of engineering design, application, and programming.
- Helped students create presentation and organize events to promote their team and gain funding.

Robotics Camp Instructor and Counselor, FIRST Robotics Team 2834

2009 - 2010

- Lead K-6 Robotics camps and designed the curriculum.
- Worked with parents to coordinate the needs for individual children.
- Organized a staff of counselors and helped them plan their classes.

Awards and Fellowships

IEEE Computational Intelligence Society Student Travel Grant

July 2016

- A limited number of grants were given to students for their unique contributions to the World Congress on Computational Intelligence (WCCI).

ECE Departmental Scholar, Michigan Technological University

February 2015

- The ECE Departmental Scholar Award is given to a senior who best represents student scholarship at Michigan Tech. This outstanding student is considered excellent not only by academic standards, but also for participation in research scholarship activity, levels of intellectual curiosity, creativity, and communication skills.

Summer Undergraduate Research Fellowship (SURF), Michigan Technological University

March 2014

- Fellowship winners will spend between 7 and 14 weeks on an individual research project under the guidance of an MTU faculty mentor.

Professional Memberships

Triangle Fraternity - Michigan Tech Chapter

- Held multiple Vice President positions including VP of Member development and VP of Scholarship.
- Organized and taught member education events to help bring prospective brothers into the fraternity.
- Organized and lead educational workshops for brothers.
- Kept an eye on brothers who were struggling academically and worked with them to improve their overall academic life.

Skills

Object Oriented Design
Assembly Language
C / C++ / Java / Python

Software Development
Small Database Arch.
Unix / Linux

Machine Learning
Circuit Design
Shell Scripting

Embedded Design
Algorithms
Mechanical CAD

Signal Processing
Systems Programming
STEM Education