Matthew Martin Orth

Computer Engineer pursuing a career in Software Engineering and Artificial Intelligence
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EXPERIENCE

Robotics Engineer, John Deere
December 2021 – Present

- Lead software engineering and architecture for FurrowVision planting automation
- Created status pipeline that notifies users when the system is not behaving as expected due to conditions
- Serve as Scrum Master and implemented various process improvements for new team

Robotics Engineer EDP, John Deere
April 2021 – November 2021

- Delivered Stereo Dust Detection that is being or planned to be used by 4 projects
- Created an automatic threshold optimization tool that achieves 90+% accuracy for provided images
- Created a virtual simulation environment for faster perception and controls iteration

Test Automation Engineer EDP, John Deere
August 2020 – March 2021

- Created a system that takes test pre-conditions and steps and automatically generates a Python testing template for around 40-50% of test steps
- Updated over 35% of the tests from the core test base to remove flakiness

Product Engineering Intern, John Deere
May 2019 – August 2019

- Developed the Single Line Shift Guidance feature that was released in the 20-1 Gen4 release
- Implemented efficient and maintainable software features in a legacy code environment

Other Experiences, Various Locations

- FIRST FTC Robotics Mentor – 2021-Present
  - Waukee FTC Robotics Teams
- Pi515 Instructor – 2022-Present
  - Python college course

EDUCATION

Iowa State University, M.Eng., Computer Engineering
Ames, IA; Graduated: May 2021: GPA: 4.0

- Emphasis in Artificial Intelligence and Software Engineering

Iowa State University, B.S., Computer Engineering
Ames, IA; Graduated: May 2020: GPA: 3.99; Summa Cum Laude

- Honor Societies: Eta Kappa Nu (HKN) and IEEE
- Activities: Cyber Defense Competitions and PrISUm Solar Car

TECHNICAL SKILLS EXPERIENCE

Language/Tool	*Professional*	*School/Personal*
Android / iOS	0 years	3 years
Assembly	0 years	1 year
AWS/Azure	0.25 years	0.75 years
C / C++	3 years	5 years
FreeRTOS	0 years	0.25 years
GIS	0 years	0.25 years
Git	3 years	5 years
HTML/CSS	0 years	1 year
Java	0.25 years	5 years
Drone/Jenkins	2 years	0 years
Linux OS	3 years	4 years
OpenCV	1.5 years	2 years
Python	2.5 years	4 years
Qt	1 year	0.5 years
REST APIs	0.5 years	1 year
SQL	0.25 years	3 years
Tensorflow/Keras	0 years	0.75 years

Concept	*Professional*	*School/Personal*
AI/ML/DL	1 year	2 years
Automated Testing	2.5 year	4 years
Software Engineering	3 years	6 years

PROJECTS

FurrowVision Software Architecture, John Deere

- Created the software architecture for FurrowVision, which successfully shipped out to 17 customer machines with stable performance

Dust Detection Threshold Optimizer, John Deere

- Created an automatic threshold optimizer tool that achieves 90+% accuracy for provided images, which was used to tune my stereo dust detection algorithm and can be applied to other applications

Simulation Environment, John Deere

- Created and integrated a virtual simulation environment to reduce time required to test perception and controls updates

Intelligent Code Editor, ISU Senior Design (1st place)

- Developed an IntelliJ IDE plugin that translates natural language (English) to equivalent Java code (currently pending publication)

OrthEngine, Personal Project

- Graphics engine written in C++ and OpenGL

Allergy Safe, Personal Project

- Built an Android and iOS app that helps users with food allergies or intolerances ensure packaged food products are free from allergens or intolerances