

Matthew Martin Orth

Computer Engineer pursuing a career in
Software Engineering and Artificial Intelligence

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
- Served 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

- Information Technology Intern, John Deere – 2018
 - AWS Cloud Security and Cryptography
- IT App Dev. Intern, Principal Financial Group – 2017
 - Web App Development and Security

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

| <i>Language/Tool</i> | <i>Professional</i> | <i>School/Personal</i> |
|----------------------|---------------------|------------------------|
| Android / iOS | 0 years | 3 years |
| Assembly | 0 years | 1 year |
| AWS/Azure | 0.25 years | 0.75 years |
| C / C++ | 2.5 years | 5 years |
| FreeRTOS | 0 years | 0.25 years |
| GIS | 0 years | 0.25 years |
| Git | 2.5 years | 5 years |
| HTML/CSS | 0 years | 1 year |
| Java | 0.25 years | 5 years |
| Drone/Jenkins | 2 years | 0 years |
| Linux OS | 2.5 years | 4 years |
| OpenCV | 1.5 years | 1.5 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 |

| <i>Concept</i> | <i>Professional</i> | <i>School/Personal</i> |
|----------------------|---------------------|------------------------|
| 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)

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