

David Schack

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I like writing production quality code that solves complex robotics problems

Skills

Languages C++20, Python, SQL

Libraries/Packages BehaviorTree.CPP, ROS, GTest, OpenCV, CUDA, Boost

Experience

Schack Engineering LLC

Robotics Software Engineer

Oct 2025 – Present

Oishii - Contract Work

- Various stability and performance improvements to strawberry harvesting robots

Collaborative Robotics

Senior Robotics Software Engineer

Dec 2024 – Present

Navigation and Autonomy Team Lead

- Led/managed a team of 5 engineers tasked with improving navigation, localization and autonomy of system
- Conducted 1:1s and Performance Evaluations, set Professional Development Goals, etc.
- Planned, scoped and staffed improvements to navigation and autonomy code
- Balanced high priority short term customer requirements with long term foundational robotics work

Intervention and Success Rate Improvement

- Built tooling to audit causes of task failure and intervention
- Analyzed data and made suggestions on highest impact to improve existing SW
- Helped develop remote teleoperation system to allow remote employees to assist robots in the field

Tortuga AgTech

Staff Robotics Software Engineer

Mar 2021 – Nov 2024

Performance Team Lead

- Led small team of engineers (me + 1-3) tasked with improving harvesting performance
- Broadly scoped project with a lot of freedom and ambiguity about where to spend time
- Wrote offline analysis tools to audit performance and make data driven parameter tuning decisions
- Designed/implemented new behavior strategies to improve picking speed and quality
- Worked with field teams to rapidly A/B test tunings and features at customer sites
- Demonstrated multiple > 50% step changes in speed

State Machine to Behavior Tree Transition

- Led overhaul of legacy Boost Statechart based state machines to BehaviorTree.CPP based behavior tree
- 8 month effort replacing the majority of legacy decision making code
- Worked with field teams to define desired user interactions
- Improved testability, understandability, maintainability, etc. of the system
- Improved test coverage from approximately 0% to > 90%
- Improved developer velocity on new features and strategies
- Successful deployment to the entire fleet only a few weeks after completion

Perception/Driving Improvements

- Improved autonomous navigation of robot in strawberry grow
- Implemented occupancy grid based algorithm for perceiving support poles and gutters
- Made improvements to motor and camera drivers to improve latency
- Pulled in off the shelf visual odometry package, tuned EKF, improved wheel odometry for better localization
- Improved driving from “entirely unusable” to “good enough that there are bigger problems”

Lockheed Martin

Robotics Software Engineer

Aug 2017 – Mar 2021

Aerial Dragnet Program

- Developed ROS architecture for multi-agent robotic system
- Developed GPU accelerated algorithm to optimize placement and motion of drone mounted sensor payloads in an urban environment to detect adversary drones

MRTL (Multi-Rotor Truck Landing)

- Developed system to land an octocopter on a moving pickup truck
- Autonomously landed on a truck at 30 MPH

Education

Colorado School of Mines

BS Mechanical Engineering - 2016 - 3.8 GPA

MS Mechanical Engineering, Robotics Focus - 2017 - 4.0 GPA