Trevor M. Decker

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Employment History

Staff Software Engineer, Thirdwave Automation (2020 - Present)
- Developed tools and managed calibration of all robots in fleet
- Developed safety critical obstacle detector
- Lead engineering operations team of 7 people doubled truck performance in under a month

Senior Robotics Engineer, Embark Trucks (2018 - 2020)
- Code owner for calibration, lanes, and scene generator: organized projects, and manged junior members
- Developed Vision Map Fusion algorithm extended lane field of view by 600% with pose graph optimization
- Developed pre and post trip auto-calibration system reducing vehicle down time by 15%
- Organized reading group with >40% company membership, running for 10+ months

Robotics Engineer, Apple Special Projects Group (2016 - 2018)
- Created bundle adjustment and SLAM pipelines for high definition map creation
- Created low cost multimodal modular distributed embedded traffic monitoring system
- Mentored team intern on reinforcement learning project

Research Assistant, Carnegie Mellon University Field Robotics Center (2011 - 2016)
- Assisted with software and hardware maintenance/development of 10+ robots
- Built multi-robot co-localization algorithms in low infrastructure environment
- Developed Kalman filter and EKF for sensor fusion
- Added vision system to robot to allow for automated initialization

Teaching Assistant, CMU Introduction to Robotics (Spring 2013 - 2016)
- 2016 lead teaching assistant, managed team of 12 TAs, wrote exams
- Designed new Bayes filter localization lab, where students solve the lost robot problem
- Taught localization/state estimation lecture for professor

Daily Use:
C++ 9 years
Python 11 years
ROS 9 years
Ceres 2 year
PCL 5 years
Ubuntu 9 years
Docker 3 years

Past Use:
OpenCV 8 years
Matlab 6 years
C 7 years
Java 5 years
HTML 4 years
LaTex 4 years
Gazebo 3 years
SolidWorks 5 years
JavaScript 2 years

Minor Use:
Free RTOS 2 years
Adobe Premiere 3 years

Mechanical/Hobby:
Mill 4 years
Lathe 4 years
3d printer 3 years
Laser cutter 2 years
Carbon Fiber 4 years

Education and Relevant Classes

Carnegie Mellon University, Pittsburgh, PA
- Masters of Science in Electrical Computer Engineering (ECE) (May 2016)
- Bachelors of Science in ECE with minors in Computer Science, Robotics, and Business Administration (2015)
- Summer 2015 Intern, Amazon Prime Air
- Summer 2014 Intern, Volkswagen Electronics Research Lab

- Robot Kinematics Dynamics and Controls
- Mechatronic Design
- Statistical Techniques in Robotics
- Parallel Computer Architecture and Programming
- Real Time Embedded Systems
- Computer Vision
- Embedded Controls
- Distributed Embedded Systems

Activities

Robotic Buggy (2013 - 2016)
- Created an autonomous robot which can compete in a traditionally human only gravity race at CMU
- Led software team (managed 8+ people) responsible for all software and firmware
- Developed a scalable real time architecture for mapping, path planning, and localization
- Wrote motion model and observation model for GPS, IMU, encoders, cameras, ...
- Built computer vision road lane and feature detectors to help extract robot's state

Distinctions

- patents US9823089 and US10302452B1 for online drone calibration
- 1st place 2017 Apple maps emerging technology reinforcement learning competition
- Computer technician: diagnosed and repaired 650+ laptop computers for high school students (2009 - 2011)
- Black Belt,Tang Soo Do Karate
- Won "Coolest Robot" award for skyscrapper window cleaner CMU Mechatronics 2016
- FIRST Robotics 3 years high school participant, 2 years mentor