

Trevor M. Decker

Employment History

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U.S. Citizen

Research Assistant, CMU Field Robotics Center (2011 - Current)

- 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

Intern, Amazon Prime Air (Summer 2015)

- Worked on computer vision and a real time embedded system for a new type of sensor
- Team is applying for multiple patents based on my work on the project
- Completed assigned internship project early, helped another intern finish a second project

Intern, Volkswagen Electronics Research Laboratory (Summer 2014)

- Developed scalable architecture for sensor extrinsic calibration verification
- Upgraded legacy code to work with new system interface
- Participated in and helped organize Computer Vision reading group
- Won 3rd place at internal hackathon

Introduction to Robotics TA (Spring 2013,2014,2015)

- Co-created final lab for class of 2013
- Designed new bayes filter localization lab; robots solve lost robot problem
- Taught localization/state estimation lecture for professor
- Helped write and grade midterms and finals - 2014 and 2015

Introduction to Electrical and Computer Engineering (Fall 2015)

- Responsible for helping students during labs and grading student homework

Education

Carnegie Mellon University (CMU), Pittsburgh, PA

- Masters of Science in Electrical Computer Engineering expect to graduate May 2016
- Bachelors of Science in Electrical Computer Engineering with minors in Computer Science, Robotics, and Business Administration (2015)

Relevant Classes

Mecatronic Design (Spring 2015)

- Received "Coolest Robot" award. Designed and built 5 degree of freedom robot to clean skyscraper windows
- Implemented vision system which can localize robot relative to the windows frame

Real Time Embedded Systems (Fall 2014)

- Designed working RTOS with priority inversion

Embedded Controls (Spring 2015)

- Programmed stable inverted pendulum

Robot Kinematics And Dynamics (Spring 2014)

- Created kalman filter for vision system parameter estimation

Computer Vision (Fall 2014)

- Designed optical text recognition system

Activities

Mentor, Girls Of Steel FIRST Robotics Team 3504 (2011 - 2013)

- Mentored CMU sponsored robotics team of 40+ high school girls
- Mentored programmers, who won Regional Innovation in Control award
- Co-taught Java programming course for students
- Acted as a Resident Assistant for 30 visiting Chinese students during a 2 week camp (2013)

Scan to see some of my work



Robotic Buggy (2013 - Current)

- Creating a robot which can autonomously compete in a gravity race at CMU
- Lead Software Team (manage 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, and cameras
- Built computer vision road lane and building feature detectors to help extract robots state

Apex Buggy Team (2011 - Current)

- Relay race at CMU with human driven carbon fiber carts built by students
- Co-founded team as a freshman (now has 40+ members), been an active member for 4+ years

<http://trevordecker.github.io/Resume/index.html>

Distinctions

- Black Belt, Tang Soo Do Karate
- Volunteer of the Year, Carnegie Science Center 200+ hours (2007)

Programming

Matlab ★★★★★
C ★★★★★
C++ ★★★★★
Java ★★★★★
Python ★★★★★
Verilog ★★★★★
HTML ★★★★★
PHP ★★★★★
JavaScript ★★★★★
SML ★★★★★
LaTeX ★★★★★

Libraries

ROS ★★★★★
Free RTOS ★★★★★
OpenCV ★★★★★
PCL ★★★★★

Software

linux ★★★★★
Adobe Premiere ★★★★★
SolidWorks ★★★★★

Mechanical

Mill ★★★★★
Lathe ★★★★★
3d printer ★★★★★
laser cutter ★★★★★
Carbon Fiber ★★★★★