

Trevor M. Decker

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U.S. Citizen

Employment History

Robotics Engineer, Apple Special Projects Group (2016 - Present)

- Created bundle adjustment and SLAM pipelines for high definition map creation
- Developed a patent pending high fidelity rolling shutter LiDAR simulator
- Created low cost multimodal modular distributed embedded traffic monitoring system
- Mentored team intern on reinforcement learning project

Programming:	Matlab	<div><div></div></div>
	C	<div><div></div></div>
	C++	<div><div></div></div>
	Java	<div><div></div></div>
	Python	<div><div></div></div>
	HTML	<div><div></div></div>
	JavaScript	<div><div></div></div>
	SML	<div><div></div></div>
	LaTeX	<div><div></div></div>

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

Libraries:	ROS	<div><div></div></div>
	Free RTOS	<div><div></div></div>
	OpenCV	<div><div></div></div>
	PCL	<div><div></div></div>
	TensorFlow	<div><div></div></div>

Intern, Amazon Prime Air (Summer 2015)

- Worked on computer vision and a real time embedded system for sensors team
- Team applied for multiple patents based on my work on the project
- Completed internship project early, helped another intern finish a second project

Software:	linux	<div><div></div></div>
	Docker	<div><div></div></div>
	Gazebo	<div><div></div></div>
	Adobe Premiere	<div><div></div></div>
	SolidWorks	<div><div></div></div>

Intern, Volkswagen Electronics Research Laboratory (Summer 2014)

- Developed scalable architecture for sensor extrinsic calibration verification
- Upgraded legacy code to work with new system interface
- Helped organize and participated in computer vision reading group

Mechanical:	Mill	<div><div></div></div>
	Lathe	<div><div></div></div>
	3d printer	<div><div></div></div>
	Laser cutter	<div><div></div></div>
	Carbon Fiber	<div><div></div></div>

Introduction to Robotics TA, CMU (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

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)

Robot Kinematics Dynamics and Controls

- Created Kalman filter for vision system parameter estimation

Real Time Embedded Systems

- Designed working RTOS with priority inversion

Mechatronic Design

- Won "Coolest Robot" award for skyscraper window cleaner

Computer Vision

- Designed optical text recognition system

Statistical Techniques in Robotics

- Used Reinforcement learning for AI to play Mario Kart clone

Embedded Controls

- Programmed stable inverted pendulum

Parallel Computer Architecture and Programming

- Developed Vision system for GPU based road segmentation

Distributed Embedded Systems

- Developed safety critical elevator control system

Activities

Robotic Buggy (2013 - 2016)

- Creating a robot which can autonomously compete in a 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 building feature detectors to help extract robot's state

Scan to see some of my work



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

- Mentored CMU sponsored robotics team of 40+ high school girls
- Co-taught Java programming course for students
- Acted as a Resident Assistant for 30 visiting Chinese students during a 2 week camp (2013)

Apex Buggy Team (2011 - 2016)

- Relay race at CMU with human driven carbon fiber carts built by students
- Co-founded team as a freshman (now has 40+ members), was an active member for 5 years

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

Distinctions

- 1st place Apple maps emerging technology reinforcement learning challenge 2017
- Computer technician: diagnosed and repaired computers for 650+ students (2009 - 2011)
- Black Belt, Tang Soo Do Karate