

# ALEXANDER DAVID STYLER

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## AREAS OF INTEREST

### *Autonomous Driving*

- Prediction, planning, and machine learning
- System latency, architecture, and optimization

## EDUCATION

### **Carnegie Mellon University**

PhD Candidate in Robotics (Expected December 2018)

### **Carnegie Mellon University**

M.S. in Robotics, QPA 3.89 (December 2012)

### **Carnegie Mellon University**

B.S. in Computer Science, Robotics Minor; QPA 3.56, University Honors (May 2008)

## EXPERIENCE

### **Prediction and System Latency**, UBER Advanced Technologies Group, Pittsburgh

Senior Software Engineer, Technical Lead/Manager (2016-present)

- Leader and developer for the System Latency working group
  - Rearchitected the core autonomy system to reduce response time by half
  - Developed tools, monitoring, and metrics to prevent response time regressions
- Technical lead for Prediction team
  - Led core efforts for vehicle prediction, interaction, and feature computation
  - Maintained interface contract and implementation, and handled consumer requests
- Managed four person Prediction Architecture and Software team

### **Various Projects**, Mitsubishi Electric Research Labs, Cambridge

Technical Intern (2015)

- Implemented unsupervised clustering techniques for vehicle trips to analyze similarity and prediction performance of energy usage (Python)
- Improved bounds of state-of-the-art time-series subsequence search to speed up pattern search in very large satellite sensor datasets

### **Predictive Optimization Project**, Group Research and Innovation Center, BMW, Munich

Visiting Student, (2014)

- Created routines to analyze, clean, and distill large driving dataset to be used in real-time for vehicle energy optimization and control (MATLAB)
- Deployed predictive optimization algorithm on prototype BMW i3 Plug-In Hybrid Vehicle

### **ChargeCar Project**, CREATE Lab, Robotics Institute, Pittsburgh

Researcher, PhD Candidate (2010-2015)

- Developed machine learning techniques for statistical prediction and optimization for control of a heterogeneous energy storage system for vehicles (Java, MATLAB, Python)
- Adapted data-driven approach to thermal optimization and control for an EV battery in collaboration with SBLiMotive and Bosch Automotive (MATLAB Simulink)

## PROGRAMMING

- Proficient in C++ and Python
- Experienced in C, MATLAB, Java, Simulink, and C#

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### PUBLICATIONS

*Learned Optimal Control of a Range Extender in a Series Hybrid Vehicle*,  
International Conference on Intelligent Transportation Systems, IEEE (2015)

*Real-time Predictive Optimization for Energy Management in a Hybrid Electric Vehicle*,  
Conference on Artificial Intelligence, AAAI (2015)

*Model Predictive Control with Uncertainty in Human Driven Systems*, Conference on  
Conference on Artificial Intelligence, AAAI (2013)

*ChargeCar Community Conversions: Practical, Electric Commuter Vehicles Now*,  
International Electric Vehicle Conference, IEEE (2012)

*Active Management of a Heterogeneous Energy Store for Electric Vehicles*, Integrated and  
Sustainable Transportation Systems, 2011 IEEE Forum (2011)

*Close These Loopholes - Testing Database Modifications*, Simple Talk (2007)

*Close those Loopholes - Testing Stored Procedures*, Simple Talk (2007)

### PRESENTATIONS

*Learned Optimal Control of a Range Extender in a Series Hybrid Vehicle*,  
ITSC (2015), Electricity Industry Center Advisory Committee (2015)

*Real-time Predictive Optimization for Energy Management in a Hybrid Electric Vehicle*,  
AAAI (2015), Carnegie Mellon University (2015)

*Model Predictive Control with Uncertainty in Human Driven Systems*,  
Carnegie Mellon University (2012), AAAI (2013), University of Pennsylvania (2013)

*Active Management of a Heterogeneous Energy Store for Electric Vehicles*,  
IEEE FISTS 2011 (2011), SBLiMotive Research (2011)

### TEACHING EXPERIENCE

**Girls of Steel Robotics Team**, Pittsburgh, PA  
Volunteer Student Mentor (2012-2014)

- Taught, supervised, and mentored secondary students for programming and controlling robots for a national competition
- Helped students learn to design and rapidly prototype robots and quickly diagnose failures

**Statistical Techniques in Robotics**, Carnegie Mellon University, Pittsburgh, PA  
Teaching Assistant (2012)

- Presented a guest lecture on statistical filtering techniques for robotics
- Developed and graded coursework and exams, held recitation study sessions

**General Robotics**, Carnegie Mellon University, Pittsburgh, PA  
Teaching Assistant and Lab Supervisor (2006-2008)

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## GRANTS AND HONORS

### NSF Graduate Research Fellowship

Awarded September 2010 through September 2013

### Program Committee, Main Track

Twenty-Ninth AAAI Conference on Artificial Intelligence, 2015

### Session Chair

IEEE Forum on Integrated and Sustainable Transportation Systems, FISTS 2011

## LEADERSHIP

- Managed three full-time direct reports and various interns (2016-present)
- Technical Lead (joint) for fifteen person software team (2017-present)
- Robotics Graduate Student Association President (2012)
- Faculty & Graduate Student Intramural Volleyball League Commissioner (2010-2012)
- School of Computer Science Student Advisory Council (2008)

## REFERENCES

**UBER**, references available upon request

**Dr. Illah Nourbakhsh**, Robotics Institute, Carnegie Mellon University

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- Phone: 412-268-2007

**Dr. Daniel Nikovski**, Mitsubishi Electric Research Labs

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- Phone: 617-621-7510