

# Kaiyu Zheng

## CONTACT

---

phone: +1 (206)504-9208   email: kaiyuzh@cs.washington.edu   website: <http://kaiyuzh.me>

## EDUCATION

---

- Expected*   **Brown University**   Providence, RI  
Ph.D. in COMPUTER SCIENCE, Advisers: Stefanie Tellex, George Konidaris  
Expected to begin in August 2018.
- JUNE 2018   **University of Washington**   Seattle, WA  
|   MASTER of Science in COMPUTER SCIENCE (GPA: 3.73/4.0)  
SEPT 2017   Coursework: ML, database, networks, convex opt., compiler, distributed systems.
- JUNE 2017   BACHELOR of Science in COMPUTER SCIENCE, Minor in MATHEMATICS (GPA: 3.85/4.0)  
|   cum laude, with honors in Computer Science  
SEPT 2013   Coursework: algo, OS, vision, graphics, AI, ML, Entrepreneurship.  
Thesis: “*Learning Large-Scale Topological Maps Using Sum-Product Networks*”  
– Advisers: Andrzej Pronobis, Rajesh P. N. Rao

## PUBLICATIONS

---

### **Learning Graph-Structured Sum-Product Networks for Probabilistic Semantic Maps**

Kaiyu Zheng, Andrzej Pronobis, Rajesh P. N. Rao  
*AAAI Conference on Artificial Intelligence (AAAI) 2018.*

### **Learning Semantic Maps with Topological Spatial Relations Using Graph-Structured Sum-Product Networks**

Kaiyu Zheng, Andrzej Pronobis, Rajesh P. N. Rao  
*IROS 2017 2nd Workshop on Machine Learning Methods for High-Level Cognitive Capabilities*

## PRESENTATIONS

---

- NOV 15<sup>TH</sup> 2017   **Probabilistic Semantic Mapping Using Graph-Structured Sum-Product Networks**, at *Industry Affiliates Research Day at the University of Washington Computer Science & Engineering* in Seattle, WA. (oral and poster presentation)
- SEPT 28<sup>TH</sup> 2017   **Learning Semantic Maps with Topological Spatial Relations Using Graph-Structured Sum-Product Networks**, at *IROS 2017 2nd Workshop on Machine Learning Methods for High-Level Cognitive Capabilities* in Vancouver, BC, Canada. (oral and poster presentation)
- MAY 19<sup>TH</sup> 2017   **Training Deep Probabilistic Models for Semantic Mapping with Mobile Robots**, at *20th Undergraduate Research Symposium at the University of Washington* in Seattle, WA. (poster presentation)

## HONORS AND AWARDS

---

Graduated cum laude, with honors in Computer Science (2017)  
Annual Dean’s List (2013-2014, 2014-2015, 2015-2016)

## RESEARCH EXPERIENCE

---

<i>Current</i>	<b>Robotics State-Estimation Lab</b>	University of Washington
APRIL - SEPT 2017	Advisers: Andrzej PRONOBIS, Rajesh RAO Proposed to model semantic maps with topological spatial relations using Graph-Structured Sum-Product Networks, a new, deep, probabilistic structured prediction approach. <b>The paper was accepted to AAAI 2018.</b>	
JAN - MAY 2017	Created a large dataset of fully-annotated robot sensory information, localization, and topological maps, which can be used for learning deep models.	
APRIL - DEC 2016	Maintained an integrated Robot OS System on the SCITOS G5 mobile robot. Improved navigation system for the robot significantly, and developed a sub-system to handle recovery behavior. Contributed a ROS navigation tuning guide to the ROS community. The guide and video demo are available on <a href="#">ROS tutorials</a> .	
APRIL - JUNE 2015	<b>Movement Control Lab</b>	University of Washington
	Advisers: Vikash KUMAR, Emanuel TODOROV Visualized sensory data on Myo, a wearable gesture control armband. Used Myo to control a 3D-printed small arm that can be worn, acting as a third arm.	
MARCH - MAY 2014	<b>ATLAS Alignment Group, Dept. of Physics</b>	University of Washington
	Adviser: Shih-Chieh Hsu Studied the global $\chi^2$ algorithm for three-plane track fitting in the ATLAS LHC experiment, through reading a thesis paper provided by the professor.	

## INDUSTRY EXPERIENCE

---

JUNE - SEPT 2015	<b>Chicago Mercantile Exchange.</b> Software Engineering Intern	Chicago, IL
	Worked in the trading-floor technology team and developed a planning & allocation web application to substitute for an Excel-driven workflow, using Java and Groovy.	
JUNE 2015   OCT 2014	<b>UW Information Technology.</b> Web Developer	Seattle, WA
	Developed and maintained university websites including IT Connect, eScience, Labgeeks, etc. Workflow followed agile development cycle using JIRA.	

## TEACHING EXPERIENCE

---

	<b>Teaching Assistant, University of Washington</b>	
SPRING 2018	CSE 311: <i>Foundation of Computing I</i> . Instructors: Paul Beame, Kevin Zatloukal	
WINTER 2018	CSE 446: <i>Machine Learning</i> . Instructor: Sham Kakade	
FALL 2017	CSE 373: <i>Data Structures and Algorithms</i> . Instructor: Evan McCarty	
WINTER 2017	CSE 446: <i>Machine Learning</i> . Instructor: Emily Fox	
FALL 2016	CSE 311: <i>Foundation of Computing I</i> . Instructors: Paul Beame, Shayan Oveis Ghan	

## VOLUNTEER EXPERIENCE

---

APRIL - JUNE 2017	Volunteer Tutor at <i>Dept. of Computer Science &amp; Engineering</i>	Seattle, WA
NOV 2014	Volunteer Food Packer at <i>Food Lifeline</i>	Seattle, WA
APRIL 2014	Table Demonstrator at <i>Paws-on Science Husky Weekend</i>	Seattle, WA