

# Abulhair Saparov

MACHINE LEARNING PHD CANDIDATE

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## Research interests

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- Probabilistic modeling, statistical machine learning, Bayesian nonparametrics, scalable inference
- Applications of machine learning to natural language processing, joint semantic-syntactic parsing
- Improving semantic parsing by incorporating prior knowledge, such as from a knowledge base with an ontology

## Education

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### Carnegie Mellon University

Pittsburgh, PA

PHD CANDIDATE IN MACHINE LEARNING

Sep. 2013 - PRESENT

- Advisor: Tom M. Mitchell

### Princeton University

Princeton, NJ

BSE IN COMPUTER SCIENCE

Sep. 2009 - May 2013

- Summa cum laude
- Certificate in Applied and Computational Mathematics
- Certificate in Neuroscience

### Princeton High School

Princeton, NJ

DIPLOMA

Sep. 2005 - Jun. 2009

- Advanced Placement Scholar with Distinction
- Enrolled in courses at Princeton University in computer science and mathematics
- Led teams in Science Olympiad and Science Bowl; organized and led participation in the Trinity Robotic Firefighting Competition
- Peer-tutored students in mathematics at the IDEAS Center

## Publications

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- **Abulhair Saparov**, Vijay Saraswat, Tom M. Mitchell (2017). A Probabilistic Generative Grammar for Semantic Parsing. *Proceedings of the Twenty-First Conference on Computational Natural Language Learning*.
- **Abulhair Saparov**, Michael A. Schwemmer (2015). Effects of passive dendritic tree properties on the firing dynamics of a leaky-integrate-and-fire neuron. *Mathematical Biosciences*, 269, 61-75.
- Tom M. Mitchell, William Cohen, Estevam Hruschka, Partha Talukdar, Justin Betteridge, Andrew Carlson, Bhavana Dalvi, Matthew Gardner, Bryan Kisiel, Jayant Krishnamurthy, Ni Lao, Kathryn Mazaitis, Thahir Mohammad, Ndapa Nakashole, Emmanouil A. Platanios, Alan Ritter, Mehdi Samadi, Burr Settles, Richard Wang, Derry Wijay, Abhinav Gupta, Xinlei Chen, **Abulhair Saparov**, Malcolm Greaves, Joel Welling (2015). Never-ending Learning. AAAI. [link]
- Xiaobai Chen, **Abulhair Saparov**, Bill Pang, and Thomas Funkhouser (2012). Schelling Points on 3D Surface Meshes, *ACM Transactions on Graphics (Proc. SIGGRAPH)*. [link]

## Experience

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### IBM Thomas J. Watson Research Center

Yorktown Heights, NY

RESEARCH INTERN

Summer 2016

- Developed grammar induction algorithms to train a semantic parser on a dataset of questions and corresponding logical forms.
- Advisor: Vijay Saraswat

### The McGraw Center

Princeton, NJ

FRESHMAN SCHOLARS INSTITUTE QUANTLAB TUTOR

Summer 2012

- Led group tutoring sessions for incoming Princeton University freshman students in calculus.

## Princeton Department of Computer Science

Princeton, NJ

RESEARCH ASSISTANT

Feb. 2012 - May 2013

- Developed and implemented novel inference algorithms to fit a probabilistic model of latent sources to fMRI brain activity data.
- Advisors: Sam Gershman, Ken Norman, David M. Blei

## Princeton Program in Applied and Computational Mathematics

Princeton, NJ

RESEARCH ASSISTANT

Oct. 2011 - May 2013

- Explored and analyzed novel dynamical behavior in the multi-compartment leaky integrate-and-fire model of a neuron.
- Advisors: Michael A. Schwemmer, Philip J. Holmes

## Google

New York, NY

SOFTWARE ENGINEERING INTERN

Summer 2011

- Designed and developed new features for the front-end of the DoubleClick for Publishers advertising platform, consulting with many different software engineering and product management groups at every stage of the test-driven development process.

## Re-verb Apparel Co. (start-up company)

CHIEF WEB DESIGNER

Nov. 2010 - 2012

- Implemented and helped design the website, including online store, using HTML5 frontend technologies and a Wordpress backend.

## Princeton Department of Computer Science

Princeton, NJ

RESEARCH ASSISTANT

Jun. 2010 - Jan. 2011

- Designed a novel feature point detection algorithm for 3D surface meshes.
- Analyzed large data sets gathered from an online user study to find patterns in human-generated point sets on 3D meshes.
- Advisor: Thomas Funkhouser.

## Teaching

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### 10-601 Introduction to Machine Learning (graduate course)

Pittsburgh, PA

TEACHING ASSISTANT

Jan. 2015 - May 2015

- Recorded, processed, and uploaded lecture videos to YouTube.
- Led recitations, created and graded homework assignments/exams, and supervised student groups on final project work.

### 10-701/15-781 Introduction to Machine Learning (graduate course)

Pittsburgh, PA

TEACHING ASSISTANT

Sep. 2014 - Dec. 2014

- Recorded, processed, and uploaded lecture videos to YouTube.
- Led recitations, created and graded homework assignments/exams, and supervised student groups on final project work.

## Skills

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<b>Programming</b>	expert in C/C++, Java; worked extensively with Python, Matlab, LaTeX, OpenGL/CL, Chuck, C#, ML, Ruby, IA32, MIPS
<b>OS</b>	Gentoo, Ubuntu Linux, Windows
<b>Database</b>	MariaDB, MySQL
<b>Web</b>	HTML5, PHP, Wordpress, jQuery, Bootstrap, Jekyll
<b>Development</b>	Eclipse, Visual Studio, Matlab, NetBeans

## Honors & Awards

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2015	<b>Teaching Assistant Award</b> , Machine Learning Department	Pittsburgh, PA
2013	<b>Honorable Mention</b> , NSF Graduate Research Fellowship	
2013	<b>Best Paper</b> , Program in Applied and Computational Mathematics	Princeton, NJ
2009	<b>2nd Place</b> , New Jersey Science Bowl	Princeton, NJ
2008	<b>Gold Key</b> , Princeton High School	Princeton, NJ

## Other information

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**Languages** native in English, conversational in Kazakh, intermediate in Spanish