

# Beibin Li

## Curriculum Vitae

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### Education

- Current **Ph.D. Candidate**, *Computer Science & Engineering*, University of Washington.  
May 2015 **Bachelor of Science**, *Mathematics*, University of Michigan, Ann Arbor.  
May 2015 **Bachelor of Science**, *Computer Science*, University of Michigan, Ann Arbor.

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### Experience

- 2016–Present **Research Associate in Computer Imaging**, SCITL,  
Seattle Children's Research Institute.  
Advisor: Frederick Shic, Ph.D.
- 2015–2016 **Research Fellow in Translational Technologies in Development**,  
TECHNOLOGY INNOVATION LABORATORY, Child Study Center, Yale University.  
Advisor: Frederick Shic, Ph.D.  
Designed eye-tracking experiments using Presentation, Python, PsychoPy, SR EyeLink, Eye Tribe, and Arduino for children with Autism Spectrum Disorder (ASD). Designed fixation identification algorithms for eye tracking technology, and use C++, Matlab, Python, and R to conduct post-hoc experiment data analysis. Communicated with collaborating implementation sites to troubleshoot eye-tracking experiments in a large NIH-funded multi-site project. Implemented virtual reality project using Python and Unity.
- 2014–2015 **Instructional Aide**, *School of Engineering*,  
UNIVERSITY OF MICHIGAN, Ann Arbor.  
Professors: Seth Pettie, Ph.D., and Grant Schoenebeck, Ph.D.  
EECS 376 (Foundations of Computer Science).  
Taught discussion sections on Finite Automata, Context Free Language, Turing Machine, complexity analysis, and NP problems. Answered students' questions in online forum and during office hours. Designed section notes, homework, exams, and graded exams for more than 300 students. Reviews from students: "*Discussions are helpful. If the lectures were taught like the discussions, I would be getting a lot more out of this course*", "*...you answer my questions so well. You always seem to understand what the student is asking...*"
- 2014–2015 **Research Fellow**, *Transportation Research Institution*,  
UNIVERSITY OF MICHIGAN, Ann Arbor.  
Professor: Paul Green, Ph.D.  
Used ISAT to design virtual roads for a driving recognition system experiment. Reviewed Literatures for speech rate, in order to design better hands-off voice control system for automobiles. Used JMP and R to analyze data from transportation research experiments. Taught ergonomics students using VisualBasic, Morae, Cogtool, IMPRINT, and other softwares to design user-friendly interface.

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## Awards

- 2015-2016 Translational Technologies Fellowship, Yale University
- 2014 The Mathematical Contest in Modeling (MCM), Honorable Mention
- 2013-2015 University Honor, University of Michigan
- 2010-2013 Presidential Scholarship, Rhodes College

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## Publications

- 2017 Atyabi, A., **Li, B.**, Ahn, A., Kim, M., Barney, E., & Shic, F. An Exploratory Analysis Targeting Diagnostic Classification of AAC App Usage Patterns. *IEEE International Joint Conference on Neural Networks (IJCNN 2017)*
- 2016 Wang, Q., Barney, E., Wall, C., Dinicola, L., Foster, C., Ahn, Y., **Li, B.**, & Shic, F. Hybrid Calibration for Eye Tracking: Smooth Pursuit Trajectory with Anchor Points. *Journal of Vision 16(12):1355. September 2016*
- 2016 Boccanfuso, L., Wang, Q., Leite, I., **Li, B.**, Torres, C., Chen, L., Salomons, N., Foster, C., Barney, E., Ahn, Y., Scassellati, B., & Shic, F.. A Thermal Emotion Classifier for Improved Human-Robot Interaction. *IEEE International Symposium on Robot and Human Interactive Communication 2016 (RO-MAN 2016)*.
- 2016 **Li, B.**, Boccanfuso, L., Wang, Q., & Shic, F.. Human Robot Activity Classification based on Accelerometer and Gyroscope. *IEEE International Symposium on Robot and Human Interactive Communication 2016 (RO-MAN 2016)*.
- 2016 Wang, Q., Boccanfuso, L., **Li, B.**, Ahn, A. Y. J., Foster, C. E., Orr, M. P., ... & Shic, F. (2016, March). Thermographic eye tracking. In *Proceedings of the Ninth Biennial ACM Symposium on Eye Tracking Research & Applications* (pp. 307-310). ACM.
- 2016 **Li, B.**, Wang, Q., Barney, E., Hart, L., Wall, C., Chawarska, K., ... & Shic, F. (2016, March). Modified DBSCAN algorithm on oculomotor fixation identification. In *Proceedings of the Ninth Biennial ACM Symposium on Eye Tracking Research & Applications* (pp. 337-338). ACM.
- 2016 **Li, B.**, Wang, Q., Boccanfuso, L., & Shic, F. (2016, March). Optimality of the distance dispersion fixation identification algorithm. In *Proceedings of the Ninth Biennial ACM Symposium on Eye Tracking Research & Applications* (pp. 339-340). ACM.

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## Presentations

- 2016 **Li, B.** (2016, July. 8). Human Robot Activity Classification for Children with Autism. Child Study Center, Yale University, New Haven, CT.
- 2016 **Li, B.** (2016, Feb. 26). Low Cost and Portable Eye Tracker. Center For Children With Special Needs, Glastonbury, CT.

- 2015 **Li, B.** (2015, Nov. 7). Background Music and Sound Effects in Human-Robot Interaction. *Northeast Robotics Colloquium 2015*. Worcester Polytechnic Institute, Worcester, MA.

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## Current Projects

- 2015–Present **NIH U19 MH108206-01**,  
THE AUTISM BIOMARKERS CONSORTIUM FOR CLINICAL TRIALS,  
PI: McPartland, James.  
Helped create eye-tracking experiments using Neurobs Presentation software, and improved eye-tracking calibration protocol. Designed a 73Hz system to measure and record light condition using Arduino and TSL2561 sensor. Built and set up eye-tracking system with SR EyeLink 1000 Plus eye trackers, web-cams, DVD recorders, and light meters. Analyze pupillary light reflex and other eye-tracking experiment data from children. Process and analyze 500 Hz eye tracking data collected across other sites. Troubleshoot eye tracking experiment and analysis across five sites, including Yale University, Boston Children's Hospital, University of Washington/Seattle Children's Research Institute, University of California (Los Angeles), and Duke University.
- 2015–Present **Simons Foundation 15-004376**,  
TRACKING INTERVENTION EFFECTS WITH EYE TRACKING,  
PI: Shic, Frederick, Ph.D.  
Helped design experiments and counterbalance eye-tracking stimuli. Built and tested eye-tracking experiments using SR eye tracker. Analyzed iPad eye-tracking data using Cambridge face tracker (CLM-framework) and OpenCV in Matlab.
- 2015–Present **Hebrew University Eye-Tracking Project**.  
Used PsychoPy to design eye-tracking experiments and Eye Tribe to collect data in Israel. Filtered and analyzed experimental data with Python and R. This project deploys portable eye-tracking experiments for children with ASD outside the United States.

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## Past Projects

- May 2015 **StagePlay**, *Swift*.  
Designed an iOS application for actors to practice their lines and to collaborate with their partners. Main features: line-by-line display, performance recording, and script editing. Compatible with iPhone and iPad.
- Feb. 2015 **Course Scheduler**, *C++*.  
Completed back-end website design for students to schedule the following year's courses. Designed and implemented algorithms in PHP, and imported 10,000 courses into SQL database. Coordinated with front-end developers.
- Oct. - Dec. 2014 **Medieval World Game**, *C++*.  
Developed a command line game for creating different characters and buildings. Applied C++ idioms and design patterns (Model View Controller, Composite, factory, etc.) so new features could be added easily.

Sept. - Oct. **Meeting Manager**, C++.

2014 Designed a meeting management command line software by using classes for abstraction and encapsulation. Implemented linked-lists, arrays, and strings that behaved like build-in types; used strong exception guarantees. Managed dynamically allocated memory with copy and move construction and assignment.

Mar. 2014 **Stock Exchange**, C++.

Designed an electronic exchange simulator by using priority queue to store buyers' and sellers' bids. Stored stock information using customized Hash-Table.

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## Computer Skills

Advanced	C++, PYTHON, MATLAB, R, VIM, C#, Unity
Intermediate	HTML, L <sup>A</sup> T <sub>E</sub> X, GIT, Swift, SQL, Visual Studio, XCode, Eclipse, Mathematica
Basic	SPSS, JMP

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## Membership

Institute of Electrical and Electronics Engineers  
Association for Computing Machinery  
International Society for Autism Research  
China Entrepreneur Network - Ann Arbor

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## Research Interests

- Computer Vision	- Machine Learning
- Optimization	- Artificial Intelligence