Bo Liu

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EDUCATION

Stanford University, Stanford, CA — Sep 2017 - Present
Master of Science, Computer Science (specialized in AI) — GPA: 4.19

Johns Hopkins University, Baltimore, MD — Sep 2013 - May 2017
Bachelor of Science, Computer Engineering — GPA: 3.94

PUBLICATION

Liu, B., Shi, S., Wu, Y., Symul, L., Pierson E., Leskovec, J., Predicting Pregnancy using Large-scale Data from a Women's Health Tracking Mobile Application. Poster acceptance at *Neural Information Systems Processing, Machine Learning for Health Workshop (ML4H at NeurIPS), 2018*.

PROJECTS

Planning under Perceptual Uncertainty (Stanford Vision Lab) — Sep 2018 - Present
End-to-end robot planning with uncertain visual input. Combine differentiable particle filter with image de-rendering for partially observable MDP planning.

Predicting Pregnancy from Large-scale Mobile App Data — Apr 2018 - Nov 2018
Create accurate and interpretable deep learning models for pregnancy prediction on large-scale data from Clue mobile application.

YOLO-Capsule Network for Detection and Classification — Apr 2018 - Jun 2018
Cascade YOLO detector with capsule-net classifier; explore the convolutional dynamic routing algorithms that replaces CNN with capsule-net.

Reproduce the *Temporal Difference Model* (ICLR 2018) — Apr 2018 - Jun 2018

Possible Improvements for Cross-Entropy Method — Apr 2018 - Jun 2018
Investigate 4 ways to improve convergence speed and stability of cross entropy method; include using Variational Autoencoder as the underlying parameterized distribution.

Tractable Feature-rich Generative Neural Parser — Sep 2016 - Jan 2018
Incorporate neural left context features learned from Long Short-Term Memory to different levels of Berkeley grammar to form a feature-rich generative syntactical parser.

Safe Autonomous Driving with Imitation Learning — Sep 2017 - Dec 2017
Introduce probability guarantee for Safe Data Aggregation (Safe-DAgger) algorithm on simulated autonomous driving environment.

EXPERIENCE

Research Engineer Intern
Baidu — Jun 2018 - Sep 2018
Develop the state-of-the-art open-source gradient boosting library, the Adaptive-Base Class boosting, with multithread C++ and cuda GPU programing; the library outperforms XGBoost and LightGBM in speed and accuracy.

Software Engineer Intern
Google Inc — May 2016 - Aug 2016
Construct responsive API for front-end light-box Ads; product has shown significant improvement of engagement rate/duration ($\sim 3\%$) on Tetris ad format.

Software Engineer-Practicum Intern
Google Inc — May 2015 - Aug 2015
Develop a web tool with visualization that extracts and filters test logs automatically; service has been used by 75+ engineers for thousands of test run on an hourly basis.

Teaching Assistant, **Natural Language Processing**
Johns Hopkins University Sep 2016 - Dec 2016
Hold weekly learning sessions and office hours; grade students homework and exams.

Lab Assistant
Computational Sensing and Robotics Lab, Sep 2015 - May 2016
Johns Hopkins University
Collect image-sensing data of different test objects for robot sensing and help improve efficiency of original program in ROS Hydro.

COURSES

Machine Learning: Reinforcement Learning, Advanced Sequential Decision Making, Computer Vision, Natural Language Processing, Graphical Models, Decision Making under Uncertainty, Machine Learning, etc.

Math: Statistical Learning Theory, Convex Optimization, Statistical Inference, Linear Algebra, Multi-variate Calculus, Differential Equations, Randomized and Big Data Algorithms, Abstract Algebra, Introduction to Probability, Signals and Systems (Fourier Transforms), etc.

AWARDS

ECE John Boswell Whitehead Award, Johns Hopkins University Mar 2017
The most qualified (top 1) student for outstanding achievement in ECE.

William H. Higgins Junior Award, Johns Hopkins University Mar 2016
The most qualified (top 1) junior in Computer Engineering for outstanding scholarship.

IEEExtreme Programming Competition 9.0 Oct 2015
Ranked **57/2477** worldwide and **4/196** in the U.S.

Best Singer Award, Johns Hopkins CSSA Singing Competition Mar 2014

AMC12 (126) and AIME (13) Certificate of Distinction Feb 2012
Ranked world **43** in American Mathematics Competition and world **41** in American Invitational Mathematics Examination.

National Mathematics Olympiad, China Sep 2011/2012
First Prize in both 2011 and 2012.

Hewlett-Packard Junior Achievement Social Innovation Relay 2012
National top 20; Design loose-leaf textbooks for student's health.

ACTIVITIES

Hop-Hack, Johns Hopkins University Sep 2014/2015
Develop iOS applications that partially encrypt photos for private social communication (in 2015) and display worldwide street views for treadmill runners (in 2014).

Hop-Help, Voluntary Work Sep 2013 - May 2014
Tutor elementary school students at local Baltimore schools.

Music Dynasty, JHU Chinese A Cappella Group Sep 2013 - Nov 2014
Arrange and compose music as music director and sing tenor and soprano.

SKILLS

Languages: Python, Java, C/C++, Matlab, JavaScript, LaTeX, etc.
Machine Learning Libraries: PyTorch, TensorFlow, Theano.
Natural Language: Mandarin Chinese (native), English, Japanese.