

Aodong Li

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Education

University of California, Irvine

PH.D. IN COMPUTER SCIENCE, ADVISED BY STEPHAN MANDT

California, the United States

Sept. 2019 - Present

New York University

M.S. IN COMPUTER SCIENCE, GPA 3.95/4.0

New York, the United States

Sept. 2017 - May. 2019

- Master Thesis/Research Fellowship, CS Department in Courant

Beijing University of Posts and Telecommunications

M.ENG. IN ELECTRONIC AND COMMUNICATION ENGINEERING, GPA 85.7/100.0

Beijing, China

Sept. 2014 - Mar. 2017

- Three counts of First Prize, BUPT Academic Scholarship

Beijing University of Posts and Telecommunications

B.ENG. IN COMMUNICATION ENGINEERING, GPA 87.8/100.0

Beijing, China

Sept. 2010 - Jun. 2014

- Three counts of Second Prize, BUPT Scholarship

Honors & Publications & Academic Services & Talks

PUBLICATIONS

Aodong Li, Alex Boyd, Padhraic Symth, Stephan Mandt. Detecting and Adapting to Irregular Distribution Shifts in Bayesian Online Learning. NeurIPS (2021)

Aodong Li, Robert Bamler, Stephan Mandt. Quantifying Gender Bias Over Time Using Dynamic Word Embeddings. SoCal Machine Learning symposium (2020)

Brody H. Foy, **Aodong Li**, James P. McClung, Rajesh Ranganath, John M. Higgins. Data-driven Physiologic Thresholds for Iron Deficiency Associated with Hematologic Decline. American Journal of Hematology (2019)

A. Li, S. Zhang, D. Wang. Enhanced Neural Machine Translation by Learning from Draft. APSIPA ASC 2017.

A. Li, B. Yang, "A Low-complexity simulation of artificial pitch period detection algorithm", 2013 International Conference on Communication Technology, Volume: 51, (doi: 10.2495/ICCT20130361)

TECHNICAL REPORTS

A. Li, L. Sun, C. Li, Y. Wang, Y. Liu. 360-degree Video Streaming by Deep Reinforcement Learning. November, 2018.

HONORS

2018	M.S. Thesis/Research Fellowship , Computer Science Department	New York, US
2015	26th Place (out of 821 teams participated) (TOP 3%) , KDD Cup 2015	Sydney, Australia
2014 - 2016	Three Counts of First Prize (TOP 30%) , BUPT Academic Scholarship	Beijing, China
2014 - 2016	Three counts of Second Prize (6/400) , BUPT Computer Programming Design Contest	Beijing, China
2011 - 2013	Three Counts of Second Prize (TOP 3% - TOP 13%) , BUPT Scholarship	Beijing, China
2012	Merit Student (10%) , Beijing University of Posts and Telecommunications	Beijing, China
2011	Merit Student Leader (5%) , Beijing University of Posts and Telecommunications	Beijing, China

ACADEMIC SERVICES

Reviewer for AISTATS 2021, ICML 2021, NeurIPS 2021, ICLR 2021.

TALKS

June, 2017 **Enhanced Neural Machine Translation by Learning from Draft**, at CSLT, Tsinghua University Beijing, China

Class Projects

Comparisons of Structure Learning Algorithms on Human Skeleton Data

New York University

COURSE: MATHEMATICAL TOOLS FOR DATA SCIENCE

Spring 2019

- Compare the algorithm performances when they are used in a less suitable scenario.
- Explore Chow-Liu algorithm and Graphical Lasso algorithm on human skeleton data.

Inferring Age Distribution of Blood Cells by Solving Inverse Problems

COURSE: MACHINE LEARNING FOR HEALTHCARE

- Try to infer the age distribution via deconvolving glycation process.
- Methods include constrained optimization and compressed sensing based idea.

New York University

Fall 2018

Black Box Variational Inference on Latent Dirichlet Allocation

COURSE: FOUNDATIONS OF MACHINE LEARNING

- Apply black box variational inference algorithm for Latent Dirichlet Allocation.
- Compare the performance with other inference algorithms.

New York University

Fall 2018

Inferring age distribution of blood cells

COURSE: DEEP GENERATIVE MODEL

- Infer the blood cell age distribution via deconvolving the glycation process.
- Use numerical integral and linear programming.

New York University

Spring 2018

Supervised Linear Distance Metric Learning with Convex Optimization

COURSE: CONVEX AND NONSMOOTH OPTIMIZATION

- Survey the main works in Distance Metric Learning with convex optimization.
- Identify the techniques these work used.
- Compare the general purpose solver CVX with special purpose solver.

New York University

Spring 2018

Skills

Programming Python (Numpy, TensorFlow, Theano), C/C++, JAVA, JavaScript, PHP, HTML, SQL

Languages Chinese, English

Office \LaTeX , MS Word, MS Excel, MS Powerpoint

Experience

Multimedia R&D and Standards Group, Qualcomm Technologies, Inc. advised by Hilmi Enes Eđilmez

California, USA

SOFTWARE ENGINEERING INTERN

Jun. 2021 - Sept. 2021

- Research on end-to-end neural video codec.
- Apply neural video codec to fisheye camera videos.
- Investigate how temporal smoothing denoises video and to what extent the denoising can improve neural video codec.
- Propose new ideas on improving neural video codec by incorporating super-resolution or switching dynamical system.

CILVR Lab in New York University advised by Prof. Rajesh Ranganath

New York, USA

GRADUATE RESEARCHER

Sept. 2018 - Present

- Research on Machine Learning for Healthcare
- Infer the age distribution of red blood cells through deconvolving the glycation process, however, with only limited measurements.
- Methods include 1) solve an inverse problem with regularization; 2) use compressed sensing based idea to find the Fourier transformation and then work in frequency domain; 3) employ Gaussian Process to impute missing data.
- Use neural networks to build connections with blood counts and other outcomes like iron deficiency.

NYU video lab in New York University advised by Prof. Yao Wang

New York, USA

GRADUATE RESEARCHER

Jun. 2018 - Present

- Apply deep reinforcement learning techniques in two-tier 360-degree video streaming.
- Used the actor-critic algorithm to train an agent to manage the playback buffers.
- By-passing connections are added on the neural networks, to regularize the model to capture near optimal actions with ease.
- Incorporate the user vision information to help the agent to take better actions.
- Our system improves 18% over the performance of a baseline system. Detailed results are summarized in the corresponding technical report).

Center for Speech and Language Technologies in Tsinghua University (CSLTTHU) advised by Prof. Dong Wang

Beijing, China

May 2016 - June 2017

RESEARCH INTERN

- Reproduced the work neural dialog systems, in both Theano and Tensorflow. Code on Github has received some popularity with several stars and forks.
- Conducted various research in Natural Language Processing.
- Proposed algorithms to enhance the semantic quality of the rare word vectors
- Proposed a two-stage translation approach based on the idea of drafting-and-refinement to enhance the Neural Machine Translation by BLEU score 0.9-2.5. The work is published at APSIPA ASC 2017.
- Assigned by Professor Dong Wang to compose chapter 1: *Linear Model* of the book *Modern machine learning techniques*; book in press.
- Did research in translation style transfer. Tried to achieve this by changing the target sentence probability through another language model with a specific style.

Pattern Recognition and Intelligent System Lab in BUPT

Beijing, China

May 2015 - Apr. 2016

RESEARCH INTERN

- Following the topic of *KDD CuP 2015*, conducted research on dropout prediction of online courses based on user logs. Did improvement on current data mining algorithm and achieved advancement to TOP 1% compared to KDD Cup 2015.
- Took part in a data mining competition *KDD Cup 2015*. As a team leader, our team conducted statistical methods to solve the issue of online course dropout prediction and ranked TOP 3% (26th out of 821 teams participated).

Pattern Recognition and Intelligent System Lab in BUPT

Beijing, China

Oct. 2014 - Sept. 2015

SOFTWARE ENGINEERING INTERN

- Advertisement Information Extraction:
 - Individual project; Crawled data from Internet auto commercials.
 - Introduced Naive Bayes Classifier and tf-idf to classify and extract target information. Both the system precision and recall reach over 90%.
- Network Management System:
 - In charge of the development of the Alarm Module of a Network Management System that monitors the performance of all equipments through one or more hosts.
 - Responsible for the configure of rsyslog and MySQL for Linux. Used PHP, JavaScript, HTML, CSS to develop Web front end and back end.

National Institute of Information Engineering

Beijing, China

Oct. 2013 - Mar. 2014

SOFTWARE ENGINEERING INTERN

- Based on the idea of map and reduce, developed identity verification system for nationwide mobile service providers.
- Covered the entire project from interface to system architecture. Used JSP, JavaScript, HTML, CSS to develop Web front end and back end.
- Large scale and fast processing: was able to verify over sixty million pieces of user information at a time.

Multi-media Technology Research Center in BUPT

Beijing, China

Dec. 2012 - Apr. 2013

RESEARCH INTERN

- Conducted research in Speech Signal Processing. Realized a novel approach to detecting pitch period by reducing algorithm complexity, time consuming and maintaining the accuracy; paper was published on 2013 International Conference on Communication Technology.

Extracurricular Activity

New York University

New York, US

TEACHING ASSISTANT

Fall 2018

- Did TA of the graduate course *Fundamental Algorithms*.
- Grader; Tutor.

Beijing University of Posts and Telecommunications

Beijing, China

Sept. 2014 - Jun. 2015

TEACHING ASSISTANT

- Did TA of the undergraduate course *Data Structure* and *C++ Programming Language*.
- Hosted recitations; Graded assignments; Assisted in labs.

Soong Ching Ling Memorial Residence

Beijing, China

Jun. 2012 - Jun. 2013

VOLUNTEER

- Helped maintain sightseeing order; stopped uncivilized behavior; helped the disabled.
- Introduced residence and exhibition of personal history to customers as a volunteer tour guide.

University Student Union

MINISTER OF THE DEPARTMENT OF STUDENT CULTURE PROMOTION

Beijing, China

Sept. 2011 - Jun. 2012

- Planned series of lectures on campus by inviting celebrities.
- Coordinated with other universities in Beijing about culture related functions.
- Established a platform to share functions' information with students across all universities participated.