

## EDUCATION

- June 2019 **Massachusetts Institute of Technology**, Cambridge, MA
- Current
    - Ph.D. Candidate at Laboratory for Information and Decision Systems (LIDS)
    - Major: Communications and Networks
    - Minor: Machine Learning
    - Also in Interdisciplinary Doctoral Program in Statistics (IDPS)
- August 2017 **Massachusetts Institute of Technology**, Cambridge, MA
- May 2019
    - Master of Science in Aeronautics and Astronautics
    - Laboratory for Information and Decision Systems (LIDS)
    - GPA: **5.0/5.0**
- August 2013 **Tsinghua University**, Beijing, China
- July 2017
    - Bachelor of Engineering in Automation
    - Bachelor of Economics in Economics (Second Degree)
    - GPA: **93/100** Ranking: **1<sup>st</sup>/118**

## COURSES AT MIT

- Prob & Stat 6.436 Fundamentals of Probability, 6.434 Statistics for Engineers and Scientists, 9.S914 Mathematical Statistics: A Non-Asymptotic Approach, IDS.131 Statistics, Computation, and Applications
- Mach. Learn. 6.246 Reinforcement Learning: Foundations and Methods, 6.437 Inference and Information
- Optimization 6.251 Introduction to Mathematical Programming, 6.252 Nonlinear Optimization
- Networks 6.263 Data Communication Networks

## WORK EXPERIENCE

- May 2020 **Google**, Google Cloud, Intern
- August 2020
    - Designed and implemented a data center routing algorithm to balance the network traffic
    - Developed a new data loss rate prediction model
    - Applied reinforcement learning methods to optimize data center structures
- June 2016 – **Stanford University**, Information Systems Laboratory, Research Assistant
- September 2016
  - Proposed and rigorously proved original properties of layered Gaussian relay network
  - Designed adaptive algorithms to accelerate locating optimal global sub-network
- January 2016 **Imperial College London**, Centre for Transport Studies, Research Assistant
- March 2016
    - Introduced a transportation network model with feedback scheme to mitigate traffic congestion
    - Established a simulation platform and conducted simulations using real traffic data
- January 2015 **Wuxi Huatong Intelligent Transportation Technology Development Co., Ltd.**, Intern
- March 2015
    - Proposed a regional road networks guidance scheme
    - Designed and built a comprehensive traffic management web client connected to real-time traffic database

## PUBLICATIONS & MANUSCRIPTS

- Submitted **RL-QN: A Reinforcement Learning Framework for Optimal Control of Queueing Systems**  
**Bai Liu**, Qiaomin Xie, and Eytan Modiano.  
*ACM Transactions on Modeling and Performance Evaluation of Computing Systems.*

September 2019 **Reinforcement Learning for Optimal Control of Queueing Systems**

[Bai Liu](#), Qiaomin Xie, and Eytan Modiano.

*57th Annual Allerton Conference on Communication, Control, and Computing.*

May 2016 **Global Optimization Framework for Real-time Route Guidance via Variable Message Sign**

[Bai Liu](#), Ke Han, and Jianming Hu [\[ArXiv\]](#)

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## PATENT & SOFTWARE COPYRIGHT

June 2016 **Global Optimization Framework for Real-time Route Guidance via Variable Message Sign**

Jianming Hu, Xin Pei, [Bai Liu](#), *et al.*

*Chinese Invention Patent.* Publication Number: CN105303856A.

February 2016 **Intelligent Networking Transportation Guidance System Platform V1.0**

*Computer Software Copyright.* Registration Number: 2016SR252223.

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## HONORS

July 2017 **Excellent Graduate Award(s)**

Won three Excellent Graduate Awards (Beijing City, Tsinghua University and Department of Automation respectively).

June 2016 **Fellowship of Stanford Undergraduate Visiting Researcher Program**, Stanford University

Top undergraduate research program, only 18 students in China are selected annually.

March 2016 **Qualcomm Scholarship**, Tsinghua University

Awarded to students with excellent scientific potential (top 0.3%).

October 2012 **1<sup>st</sup> Prize in the National Mathematical Olympiad**, Chinese Mathematical Society (CMS)

October 2012 **2<sup>nd</sup> Prize in the Chinese Physics Olympiad**, Chinese Physical Society (CPS)

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## PROGRAMMING SKILLS

Proficient Python, C/C++, MATLAB,  $\text{\LaTeX}$

Familiar Mathematica, SQL, Oracle