

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)
 - Advisor: Eytan Modiano

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: **1st/118**
 - Graduated with Outstanding Honor (Top 1%)

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

RESEARCH INTERESTS

Fields	Learning and control methods in networked systems
Tools	Reinforcement learning, stochastic optimization, statistics

PUBLICATIONS & MANUSCRIPTS

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.

August 2016 **Efficiently Reaching the Largest Wireless Capacity with the Fewest Relays**

[Bai Liu](#), Xiugang Wu, and Ayfer Özgür

Presented at *Stanford UGVR Program Workshop*. [[Poster](#)]

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

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

WORK EXPERIENCE

- June 2016 – **Information Systems Laboratory**, Stanford University
- September 2016 –
- Proposed and rigorously proved six original properties of layered Gaussian relay network
 - Designed adaptive algorithms based on a dynamic programming method that can locate optimal global sub-network exponentially faster
- January 2016 **Centre for Transport Studies**, Imperial College London
- March 2016 –
- Introduced feedback scheme into a transportation network model and applied the linear decision rule and heuristic optimization approach to design optimization algorithm
 - Established a simulation platform and conducted a simulation case study on a real-life test network in China
- January 2015 **Wuxi Huatong Intelligent Transportation Technology Development Co., Ltd.**, Jiangsu, China
- March 2015 –
- Successfully designed a guidance scheme based on regional road networks and implemented simulation
 - Designed and built a comprehensive traffic management system web client connected to real-time traffic database
 - Applied for a patent as the third author (CN105303856A)

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.

HONORS

- July 2017 **Excellent Graduate Award(s)**
Won Excellent Graduate Award for three times (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 2014 **China National Scholarship**, the Ministry of Education, China
Highest level of scholarship set by the government of China (< top 0.1%).
- October 2012 **1st Prize in the National Mathematical Olympiad**, Chinese Mathematical Society (CMS)
- October 2012 **2nd Prize in the Chinese Physics Olympiad**, Chinese Physical Society (CPS)

PROGRAMMING SKILLS

- Proficient Python, Keras, MATLAB, C/C++, C#, \LaTeX
- Familiar Mathematica, SQL, Oracle, Git, Javascript, HTML/CSS