

EDUCATION

- August 2017 **Massachusetts Institute of Technology**, Cambridge, MA
– Current
- Ph.D. Program in Laboratory for Information and Decision Systems (LIDS)
 - Advisor: [Eytan H. Modiano](#)
- 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%)

RESEARCH INTERESTS

- Fields Learning and control problems in networked systems (data networks, logistic networks etc.)
Tools Reinforcement learning, stochastic optimization, inference methods

PUBLICATIONS & MANUSCRIPTS

- In Submission **Global Optimization Framework for Real-time Route Guidance via Variable Message Sign**
[Bai Liu](#), [Ke Han](#), and [Jianming Hu](#)
Submitted to *Transportmetrica A*. Received positive feedback. [\[ArXiv\]](#)
- In Submission **Efficiently Reaching the Largest Wireless Capacity with the Fewest Relays**
[Bai Liu](#), [Xiugang Wu](#), and [Ayfer Özgür](#) [\[Poster\]](#)
- April 2015 **Dynamic Traffic Guidance Generating Method on Variable Message Sign in Small and Medium-Sized Cities**
[Bai Liu](#), [Jianming Hu](#), Pan Gao, and Xudong Xie
In *14th ITS Asia Pacific Forum*. Full length oral presentation.

RESEARCH EXPERIENCE

- June 2016 – **Information Systems Laboratory**, Stanford University, Advisor: Prof. [Ayfer Özgür](#)
- 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, Advisor: Prof. [Ke Han](#)
- 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 (based on MATLAB, >3,000 lines of codes) and conducted a simulation case study on a real-life test network in China
- August 2015 **Institute for Interdisciplinary Information Sciences**, Tsinghua University, Advisor: Prof. [Longbo Huang](#)
- July 2016
- Applied both discrete model and fluid model to vehicle scheduling problem
 - Utilized dynamic programming and stochastic networks methods and proved the upper bound of the total number of vehicles required for balancing
 - Proposed a polynomial-time algorithm to obtain the optimal scheduling policy

- January 2015 **Institute of System Engineering**, Tsinghua University, Advisor: Prof. [Jianming Hu](#)
– July 2015 – Successfully designed a guidance scheme based on regional road networks and implemented simulation
– Designed and built a comprehensive traffic management system web client (>9,000 lines of codes)

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).
- December 2016 **Cai Xiong Scholarship**, Tsinghua University
Awarded to students with excellent scientific potential (top 0.1%).
- October 2016 **Fang Chongzhi Scholarship**, Tsinghua University
Highest honor in the Department of Automation (top 1/560).
- October 2016 **Tang Lixin Scholarship**, Tsinghua University
Awarded to students with outstanding academic and scientific performance (top 0.2%).
- 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 2015 **Fang Chongzhi Scholarship**, Tsinghua University
Highest honor in the Department of Automation (top 1/560).
- May 2015 **Fellowship of Spark Talents Program**, Tsinghua University
Awarded to the top 50 Tsinghua students, dedicated to scientific and technological innovations.
- 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 Physics Mathematical Olympiad**, Chinese Physical Society (CPS)

PROGRAMMING SKILLS

- Proficient MATLAB (>30k lines), C/C++ (>20k lines), C# (>10k lines), \LaTeX
Familiar Python, Mathematica, SQL, Oracle, Git, Javascript, HTML/CSS

LANGUAGE SKILLS

- TOEFL iBT 107/120 (Reading 30, Listening 28, Speaking 23, Writing 26)
GRE 324/340+3.5/6.0 (Verbal 154, Quantitative 170, Analytical Writing 3.5)