Bai Liu

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EDUCATION

Tsinghua University, Beijing, China Sept 2013-Present

- Bachelor of Engineer in Automation (expected in July 2017)
- GPA: **93/100** Ranking: **1st/145**

Stanford University, Stanford, CA, USA Jun 2016-Sept 2016

- The Chinese Undergraduate Visiting Research (UGVR) Program, only 18 students selected from China
- Undergraduate visiting research assistant in Department of Electrical Engineering

Imperial College London, London, UK Jan 2016-Mar 2016

- Undergraduate visiting research assistant in Intelligent Transportation Systems Laboratory

Relative Courses

- **Research**: Student Research Training **(99/100)**, Literature Searching and Utilization **(98/100)**
- **Mathematics**: Introduction to Complex Analysis **(99/100)**, Probability and Statistics **(94/100)**, Linear Algebra **(93/100)**, Numerical Analysis and Algorithms **(93/100)**, Applied Stochastic Processes **(92/100)**
- **Programming**: Introduction to Systems Engineering **(99/100)**, C++ Programme Design and Training **(94/100)**, Fundamental Pattern Recognition **(94/100)**

PUBLICATIONS & PATENT

- **Bai Liu**, Jianming Hu, Pan Gao, and Xudong Xie, "Dynamic Traffic Guidance Generating Method on Variable Message Sign in Small and Medium-Sized Cities", *14th ITS Asia Pacific Forum*. Full version accepted. Invited to do oral presentation
- Ke Han, **Bai Liu**, and Jianming Hu, "Global optimization framework for real-time route guidance via variable message sign", *Transportmetrica A*, submitted
- Jianming Hu, Xin Pei, **Bai Liu**, "An Information Distribution Method of Variable Message Sign Based on Prediction Method", Chinese Invention Patent. Application ID: 201510768010.4. Date: 2015.11.12

RESEARCH EXPERIENCES

Stanford University, Stanford, CA, USA Jun 2016-Present
Information Systems Laboratory, Department of Electrical Engineering
Research Assistant, Advisor: **Prof. Ayfer Özgür**

Project: Subnetwork Selection of Gaussian Relay Network

- Thoroughly studied and rigorously proved properties of layered Gaussian relay network
- Developed and implemented an algorithm that can find optimal global subnetwork exponentially faster
- Designed efficient algorithms for the cases with dynamic parameters
- Currently drafting a first-authored paper

Tsinghua University, Beijing, China Aug 2015-Present
Institute for Interdisciplinary Information Sciences (IIIS)
Research Assistant, Advisor: **Prof. Longbo Huang**

Project 1: Management Scheme of Auto-Driving Vehicles

- Used dynamic programming and stochastic networks methods
- Obtained structural properties of the optimal solution
- Successfully established a model simulation platform

Ongoing project : Auto-Driving Management with Queueing

- Co-advisor: Dongning Guo, professor at Department of Electrical Engineering & Computer Science, Northwestern University
- Introduced queueing model into the problem
- Currently establishing detailed model

Imperial College London, London, UK Jan 2016-Mar 2016
Intelligent Transportation Systems Laboratory
Research Assistant, Advisor: **Prof. Ke Han**

Project: Dynamic Transportation Network Modeling

- Built transportation network model with variable message sign feedback and traffic signal control
- Designed control optimization algorithm with linear decision rule and heuristic optimization approach
- Contributed to a second-authored paper, which has been submitted to *Transportmetrica A*

Tsinghua University, Beijing, China Jan 2015-July 2015
Institute of System Engineering, Department of Automation
Research Assistant, Advisor: **Prof. Jianming Hu**

Project: Dynamic Traffic Guidance Scheme Design

- Successfully designed guidance scheme based on regional road networks and made thorough simulation
- Systematically studied the feedback effect of the scheme

HONORS & AWARDS

2016 Fang Chongzhi Scholarship (Highest honor in the Dept. of Automation, 1 out of 560, win for the second time)
2016 Tang Lixin Scholarship (Awarded to students with outstanding academic and scientific performance, 0.2%)
2016 Qualcomm Scholarship (Awarded to students with scientific potential, 0.3%)
2015 Fang Chongzhi Scholarship (Highest honor in the Dept. of Automation, 1 out of 560)
2015 Tsinghua Spark Talents Program (Undergraduate High-tech Club) Membership
2015 2nd Prize of 33rd Challenge Cup (Top scientific research contest in Tsinghua University, 7.5%)
2014 China National Scholarship (Highest level of scholarship set by the government of China, 2%)
2012 1st Prize of National Mathematical Olympiad (<0.01%)
2012 2nd Prize of National Physics Olympiad (<0.05%)

ACTIVITIES

Investigation of Technology and Culture in Japan | Group Leader July 2015-Aug 2015

- Completed a field trip to Japan, visiting three cities and nine institutions

Student Research Training Program | Project Leader July 2014-Dec 2014

- Acted as the core member of the national project and led a team with seven members

TECHNICAL STRENGTHS

- **Programming Languages**: Proficient in C/C++, Matlab, Mathematica, C#, Web programming
- **Tools**: LaTeX, git, SQL, Oracle

LANGUAGE SKILLS

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