Taibo Li

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EDUCATION

Massachusetts Institute of Technology   *Cambridge, MA, USA*

Candidate for M.Eng. in Electrical Engineering and Computer Science, GPA 5.0/5.0   June 2017 (Expected)

S.B. in Electrical Engineering and Computer Science, GPA 5.0/5.0   Sept. 2012–June 2015

  Probabilistic Systems Analysis, Machine Learning, Algorithms for Inference, Microelectronic Devices and Circuits, Biomedical Signal and Image Processing, Computational Systems Biology, Economics of Global Health, Advanced Population and Medical Genetics, Matrix Methods in Data Analysis

University of Cambridge   *Cambridge, UK*

Exchange Student in Engineering, Part IIA Tripos, Top First Class Honours   Oct. 2013–June 2014

  Signal Processing, Control, Medical Imaging and Computer Graphics, Computational Neuroscience

The University of Hong Kong   *Hong Kong, China*

Candidate for B.Eng. in Medical Engineering and B.B.A in Finance, GPA 4.16/4.30   Sept. 2011–July 2012

  Biochemistry, Engineering Materials, Mechanics, Accounting, Corporate Finance (Transferred to MIT)

RESEARCH EXPERIENCE

Massachusetts General Hospital / Broad Institute of MIT and Harvard   *Boston, MA, USA*

Research Assistant, Associate Computational Biologist   Apr. 2013–May 2017

  Advisor: Kasper Lage, Ph.D. and Guoping Feng, Ph.D.

- Constructing functional brain networks perturbed by genetics of psychiatric disorders from quantitative proteomic and RNA-Seq data on Ngn-differentiated human neurons
- Designed an integrated pipeline to analyze single-cell RNA-Seq data of mouse thalamic reticular nucleus
- Developed and benchmarked InWeb_InBioMap, a globally scored human protein-protein interaction network (PPIN) that contains 585,843 interactions from 43,021 publications, which achieved consistently better biological signals than existing resources
- Developed and tested novel computational methods, including Quack and Network Mutation Burden (NMB), that can learn pathway structure and detect novel gene associations based on biological networks

Integrative Neuromonitoring and Critical Care Informatics Group, MIT   *Cambridge, MA, USA*

MIT EECS – Wertheimer Undergraduate Research and Innovation Scholar   Sept. 2014–Apr. 2016

  Advisor: Thomas Heldt, Ph.D.

- Categorized sources and prevalence of critical care alarms from 1,277 adult patients and 917 neonatal patients; identified relationship between alarm frequency and postmenstrual age for babies between 25-40 weeks of age in neonatal ICU
- Designed a general computational framework to parse and match electronic medical records and bedside monitoring data for 9,708 patients
- Developed a random forest model that can predict the occurrence of clinically irrelevant threshold alarms

Wellcome Trust – Medical Research Council Cambridge Stem Cell Institute   *Cambridge, UK*
Genetics Society Summer Research Studentship   Dec. 2013–Aug. 2014

Advisor: Bon-Kyoung Koo, Ph.D.
- Identified three groups of genes which revealed five distinct subtypes of colorectal cancer patients using microarray data from 1,080 patients; confirmed classification results with Kaplan-Meier analysis
- Optimized cloning conditions for vectors with up to 4 concatamers to simultaneously knock out paralog genes using CRISPR/Cas9 technology; performed mouse intestinal organoid culturing

WORK EXPERIENCE

EndoLayers   *Boston, MA, USA*
Developer   Sept. 2015–Present
- Developing a deep neural network model that can help physicians identify adenomatous polyps during colonoscopy procedures

Quantopian, Inc.   *Boston, MA, USA*
Intern   Dec. 2012–Aug. 2013
- Wrote trading algorithms in Python, one of which was featured in the front page of Hacker News and got 15,600 views
- Organized company outreach events in Beijing which attracted 50 people, and presented machine learning trading algorithms

China Affairs Office, The University of Hong Kong   *Hong Kong, China*
Assistant Officer   July 2012–Aug. 2012
- Managed communications with more than 1,500 applicants to the University and provided timely feedback on admission information and decisions; arranged interviews in 10 cities across China

Microsoft China   *Beijing, China*
Marketing Intern   Dec. 2011–Jan. 2012
- Tested three online applications, and suggested alternative designs to improve user experience
- Monitored and analyzed hourly website traffic to help prioritize the company's online marketing strategies

PUBLICATIONS AND PRESENTATIONS

Journal Articles

Li T*, Wernersson R*, Hansen RB*, et al. (2017). A scored human protein-protein interaction network to catalyze genomic interpretation. *Nat Methods,* **14**, 61-64.

Li J, Zhang C, Huang P, Kuru E, Forster-Benson E, **Li T**, Church G. (2017) Dissecting limiting factors of the Protein synthesis Using Recombinant Elements (PURE) system. *Translation* **5,** e1327006.

Merenda A, Andersson-Rolf A, Mustata RC, **Li T**, Kim H, Koo B-K. (2017). A Protocol for Multiple Gene Knockout in Mouse Small Intestinal Organoids Using a CRISPR-concatemer. *J Vis Exp*. (In press.)

Andersson-Rolf A, Merenda A, Mustata RC, **Li T**, Dietmann S, Koo B-K. (2016). Simultaneous paralogue knockout using a CRISPR-concatemer in mouse small intestinal organoids. *Dev Biol*, **420**(2), 271-277

Manuscripts Under Review

Li T, Mercer J, Rosenbluh J, et al. (2017). A unified web platform for network-based analyses of genomic data. *Nat Biotechnol*. (Under Review)

Li T, Matsushima M, Timpson W, et al. (2017). Epidemiology of bedside monitoring alarms in the neonatal intensive care unit. *Pediatrics*. (Under Review)

Li D, **Li T**, Paschalis E, et al. (2017) Optic nerve head characteristics in chronic angle closure glaucoma detected by swept-source OCT. *Curr Eye Res*. (Under Review)

Conference Presentations

Li T, Kim A, Malolepsza E, Nacu E, Tanenbaum B, Ripke S, Daly M, Schenone M, Jaffe J, Eggan K, Lage K. Human brain networks perturbed by genetics and targeted by therapeutics in psychiatric disorders. Poster session presented at: Fourth Annual Broad-ISF Cell Circuits Symposium; 2016 June 28; Cambridge, MA.

Li T, Cohen J, Craig M, Tsourides K, Mahmud N, Berzin T. The next endoscopic frontier: a novel computer vision program accurately identifies colonoscopic colorectal neoplasia. Poster session presented at: Endoscopy – new imaging technology. Digestive Disease Week; 2016 May 23; San Diego, CA.

Li T, Matsushima M, Timpson W, Young S, Gupta M, Heldt T. Epidemiology of bedside monitoring alarms in the neonatal ICU. Poster session presented at: Neonatology (NICU quality improvement). Pediatric Academic Societies Meeting; 2016 April 30; Baltimore, MD.

TEACHING EXPERIENCE

Cambridge Street Upper School   *Cambridge, MA, USA*
Volunteer   Jan. 2016–Mar. 2017
- Designed classroom activities to teach genetics to 70 eighth-grade students
- Mentored one seventh-grade student with bi-weekly email correspondence and lab visits at the Broad Institute

The Perse School for Girls   *Cambridge, UK*
Assistant Instructor   Oct. 2013–Mar. 2014
- Provided weekly tutoring for 30 students in Year 9 math class, and lectured trigonometry using real-life examples to stimulate student interest; advised the school math Olympiad team

MIT Global Startup Labs   *Accra, Ghana*
Technical Instructor   June 2013–July 2013
- Taught entrepreneurship and web app development (Django/Heroku) to 30 college freshmen at Ashesi University College
- Helped launch five startups and organized networking events to promote entrepreneurship in the local community

Massachusetts Institute of Technology   *Cambridge, MA, USA*
Lab Assistant, Teaching Assistant   Jan. 2013–May 2013
- Provided weekly laboratory instructions and evaluations for 80 students in 6.01: Introduction to Electrical Engineering and Computer Science I (Course Director: Professor Dennis Freeman)
- Prepared problem set and recitation materials for the edX course 6.041x: Probabilistic Systems Analysis (Course Director: Professor John N. Tsitsiklis)

INSTITUTITIONAL SERVICE

MIT Department of Electrical Engineering and Computer Science (EECS) Sept. 2014–June 2015
- *Member of the Undergraduate Student Advisory Group in EECS (USAGE)*: provided feedback on student workload, curriculum reform, and faculty advising to the department administration
- *Member of the Student Sub-Committee on Faculty Search*: interviewed four electrical engineering faculty candidates and compiled student ratings to the faculty search committee
- *Peer Advising Chair of the IEEE/ACM club*: trained 15 peer counselors and held panel discussions to address questions and concerns from underclassmen; organized orientation sessions for exchange and special students in the Department
- *Member of the Eta Kappa Nu honor society*: compiled and published student course evaluation for 16 EECS subjects

MIT Global Education and Career Development (GECD) Go Abroad Program Sept. 2014–June 2015
Peer Mentor
- Helped plan and organize Go Abroad info sessions, orientations, and booths at the MIT International Fair, encouraging interested students to explore Go Abroad opportunities and addressing their questions

COMMUNITY SERVICE

Tsinghua University Alumni Association at Greater Boston, *Committee Member* Oct. 2015–Present
- Organizing social and professional events for over 400 members in the Greater Boston area

Boston Children's Hospital, *Cultural Navigator Volunteer* Sept. 2015–Sept. 2016
- Assisting patients and families from China to communicate with caregivers, navigate through hospital resources, and adapt to the new cultural environment; supporting patient discharge

MyH2O, *Developer* June 2014–July 2016
- Developing online platform myh2o.org and associated Android applications where people can share water quality information across China
- Assisting with funding applications (won MIT Ideas Global Challenge '13, the National Geographic Air and Water Conservation Fund '14, Harvard SEED for Social Innovation '15, and MIT Water Innovation Prize '16)

MIT China Care Club, *Membership Chair* Oct. 2012–Apr. 2016
- Planned and participated in monthly playgroup meetings for more than ten families with adopted Chinese children between 5-10 years old in the Boston area; co-organized on-campus recruitment and fundraising events

St John Ambulance Cambridge LINKS (UK), *First Aider* Oct. 2013–June 2014
- Attended weekly first aid seminars and became a licensed first aider; covered four major duties in the Cambridge area and treated more than 50 casualties

ACTIVITIES AND INTERESTS

Programming: Python, R, MATLAB, C, C++, Java, Android, Amazon AWS, Heroku (Django & Postgresql)
Languages: Mandarin Chinese (native), Cantonese (professional), and Spanish (beginning)
Social Activities: Alpha Delta Phi Fraternity; Magdalene Boat Club Cambridge; St. John's College, the University of Hong Kong
Performing: MIT Jewish and Israeli a cappella group Techiya (Bass)
Other Hobbies: Avid traveler; Fan of the Boston Symphony Orchestra; MIT "Pirate Certified": archery, fencing, pistol, and sailing

ACADEMIC HONORS AND AWARDS

MIT School of Engineering Henry Ford II Scholar Award (2015)
MIT Peter J. Eloranta Research Fellowship (2015)
Member of Tau Beta Pi Honor Society (2015)
Genetics Society (UK) Summer Studentship (2013)
Cambridge Consultants Prize for Bioengineering (2013)

OTHER AWARDS

MIT School of Humanities, Arts, and Social Sciences Burchard Scholarship (2014)
The Hong Kong Jockey Club Scholarship (2012)