

Yang Li

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Education

Ph.D. in Computer Science, Stanford University, 2011 - 2017. GPA: 3.752

Dissertation: Exploiting Shared Structures in Large GPS Trajectory Datasets under Uncertainty
Advisor: Leonidas J. Guibas

B.A. Double major in Computer Science and Mathematics, Smith College, 2007 - 2011. GPA: 3.91

Honors Thesis: Inverse Kinematics Methods for the Protein Loop Closure Problem
Advisor: Ileana Streinu

Honors, Awards, & Fellowships

Stanford Graduate Fellowship in Science and Engineering, Stanford University (2012)
Highest Honors Thesis in Computer Science, Smith College (2011);
Pokora Prize for Excellence in Mathematics, Smith College (2011);
Bert Mendelson Prize for excellence in computer science, Smith College, (2009, 2011),
Mellon Mays Undergraduate Research Fellowship, Smith College, 2009-2011.
Dean's List and First Group Scholar, Smith College, 2007-2011,
Smith Summer Undergraduate Research Fellowship, Smith College, Summer 2008.

Research and Work Experience

Assistant Professor

October 2019 - Present

Data Science and Information Technology Research Center, Tsinghua-Berkeley Shenzhen Institute.

- Develop novel solutions to multi-task transfer learning, curriculum learning and semantic embedding of high dimensional data.

Postdoctoral Researcher

September 2017 - September 2019

IoT and Cyber-Physical System Lab, Tsinghua-Berkeley Shenzhen Institute.

Principal Investigator: Lin Zhang

- Designed an efficient, interpretable and easy-to-compute metric for transferability in task transfer learning based on information theory
- Developed algorithms for multi-modal learning and semantic embeddings in vision domain
- Help Ph.D. and master students with their research in mobility data mining and machine learning
- Regularly hold reading group and give lectures related to current research

Graduate Research Assistant

July 2012 - December 2016

Geometric Computing Lab, Stanford University.

Advisor: Leonidas J. Guibas

- Developed algorithms to predict path travel time from trajectories of limited number of mobile sensors
- Devised algorithms for reconstructing dense vehicle trajectories from sparse GPS samples without map data
- Designed a data-driven algorithm to solve the map matching problem with uncertain input
- Regularly presented findings at research group meetings

Graduate Research Assistant

April 2011 - June 2011

First Year Research Rotation Program, Computer Science Department, Stanford University.

Advisor: Kenneth Salisbury

- Researched and implemented collision detection algorithms for craniofacial surgery simulation

Graduate Research Assistant

September 2011 - March 2011

First Year Research Rotation Program, Computer Science Department, Stanford University.

Advisor: Leonidas J. Guibas

- Developed techniques for analyzing leader-follower relationships in trajectories, and applied to study collective motion of cows
- Competed in a finalist team in Qualcomm Innovative Fellowship 2012 with research proposal, *Exploring Causality in Mobility Data*
- Regularly presented findings at research group meetings

Summer Intern

May - August 2011

Linkage Lab, Smith College

- Optimized internal workflow of KINARI-Web, a web server for protein rigidity and flexibility analysis. KINARI-Web is available at <http://kinari.linkage.cs.umass.edu/>.
- Implemented honors thesis results on protein gap detection and completion as C++ modules of KINARI library

Undergraduate Fellow

May 2009 - April 2011

Mellon Mays Undergraduate Research Fellowship Program, Smith College

Faculty mentor: Ileana Streinu

- Presented honors thesis to President and Provost
- Conducted research on finding inverse kinematics solutions for short robotic chains, presented results to Mellon Mays Advisory Board
- Researched robotic representations of proteins, presented results in Computational Biology Seminar
- Developed and maintained KINARI-Web in collaboration with members of Prof. Streinu's [Linkage Lab](#).

Research Assistant

November 2007 - May 2009

Ileana Streinu, Computer Science Department, Smith College

- Improved usability and functionality of KINARI GUI front-end and visualizer, predecessor of KINARI-Web
- Demonstrated KINARI front-end/visualizer at 2009 Barbados Workshop on Computation Geometry. Gave related poster presentation at Collaborations 2009, Smith College; and at Consortium for Computing Sciences in Colleges: Northeastern Region 2009, SUNY Plattsburgh
- Maintained internal bibliography system by editing citations, searching and uploading articles
- Modeled kinetic structures using Solidworks, prepared figures for Linkage Lab publications.

Undergraduate Researcher

May - August 2008

Women in Science Summer Research Fellows Program, Clark Science Center, Smith College

- Actively participated in meetings and brainstorm sessions of Linkage Lab on protein modeling and visualization topics
- Researched and evaluated existing protein visualization software
- Designed and prototyped KINARI GUI front-end and visualizer

Publications

Papers

Nikolaos Zygouras, Nikolaos Panagiotou, Yang Li, Dimitrios Gunopulos, and Leonidas Guibas. 2019. HTTE: A Hybrid Technique For Travel Time Estimation In Sparse Data Environments. In Proceedings of the 27th SIGSPATIAL International Conference on Advances in Geographic Information Systems (SIGSPATIAL '19), 2019

Jing Lian, Yang Li, Weixi Gu, Shao-Lun Huang and Lin Zhang, Mining Mobility Patterns with Trip-Based Traffic Analysis Zones: A Deep Feature Embedding Approach, In Proceedings of 2019 IEEE Intelligent Transportation Systems Conference (ITSC), 2019

Yajie Bao*, Yang Li*, Shao-Lun Huang, Lin Zhang, Lihong Zheng, Amir R. Zamir, and Leonidas Guibas. An Information- Theoretic Metric to Transferability for Task Transfer Learning. In Proceedings of the 26th IEEE International Conference on Image Processing (ICIP), 2019. (*Joint first author)

Lu Li, Yang Li, Xiangxiang Xu, Shao-Lun Huang and Lin Zhang, Maximal Correlation Embedding Network for Multilabel Learning with Missing Labels, In Proceedings of 2019 IEEE International Conference on Multimedia and Expo (ICME), July 2019

Fei Ma, Wei Zhang, Yang Li, Shao-Lun Huang, and Lin Zhang, An End-to-End Learning Approach for Multimodal Emotion Recognition: Extracting Common and Private Information, In Proceedings of 2019 IEEE International Conference on Multimedia and Expo (ICME), July 2019

Yang Li, Dimitrios Gunopulos, Cewu Lu and Leonidas Guibas, Personalized Travel Time Prediction Using a Small Number of Probe Vehicles, ACM Transactions on Spatial Algorithms and Systems, Special Issue on Urban Mobility: Algorithms and Systems, 2019.

Jing Lian, Yang Li, Weixi Gu, Shao-Lun Huang and Lin Zhang Mining Regional Mobility Patterns for Urban Dynamic Analytics, Mobile Networks and Applications, July 2019, Springer

Jing Lian, Yang Li, Weixi Gu, Shao-Lun Huang, and Lin Zhang. Joint Mobility Pattern Mining with Urban Region Partitions. In EAI International Conference on Mobile and Ubiquitous Systems: Computing, Networking and Services (MobiQuitous '18), 2018 (Best Paper Award)

Yang Li, Dimitrios Gunopulos, Cewu Lu and Leonidas Guibas, Urban Travel Time Prediction Using a Small Number of GPS-Floating Cars, 25th SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL '17), 2017.

Yang Li, Yangyan Li, Dimitrios Gunopulos, and Leonidas Guibas, Knowledge-Based Trajectory Completion from Sparse GPS Samples, In Proceedings of the 24th SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL '16), 2016

Yang Li, Qixing Huang, Michael Kerber, Li Zhang and Leonidas Guibas, Large-Scale Joint Map Matching of GPS Traces, In Proceedings of the 21th SIGSPATIAL International Conference on Advances in Geographic Information Systems (GIS '13), 2013.

Naomi Fox, Filip Jagodzinski, Yang Li, Ileana Streinu, *KINARI-Web: A Web Server for Protein Rigidity and Flexibility Analysis*, Nucleic Acids Research, 39 (Web Server Issue), 2011.

Dominique Thiebaut, Yang Li, Diana Jaunzeikare, Alexandra Cheng, Ellysha Raelen Recto, Gillian Riggs, Xia Ting Zhao, Tonje Stolpestad, and Cam Le T Nguyen, *Processing Wikipedia Dumps: A Case Study Comparing the XGrid and MapReduce Approaches*, in Proceedings of 1st International Conference on Cloud Computing and Services Science (CLOSER 2011), Noordwijkerhout, NL, May 2011.

Naomi Fox, Filip Jagodzinski, Yang Li, and Ileana Streinu, *A Web-Based Tool for Rigidity Analysis of Proteins* in Biotechnology and Bioinformatics Symposium (BIOT 2009), Lincoln, Nebraska, 2009.

Posters and Abstracts

Lu Li, Yang Li, Xiangxiang Xu and Lin Zhang, *A Maximal Correlation Embedding Method for Multilabel Human Context Recognition*, Poster abstract accepted to the 18th ACM/IEEE Conference on Information Processing in Sensor Networks (IPSN'19), Montreal, Canada, April, 2019

Yang Li and Leonidas Guibas, *Leader-Follower Relationships in Trajectories – a Case Study*, Abstract accepted for oral presentation at the 2012 Computational Geometry: Young Researchers Forum, Chapel Hill, NC, June, 2012

Yang Li and Ileana Streinu, *Finding Inverse Kinematics Solutions of Short Robotic Chains*, Poster abstract published in [Proceedings of Celebrating Collaborations 2010](#), Smith College, April, 2010

Yang Li and Ileana Streinu, *Inverse Kinematics Algorithm on Short Robotic Chains*, Poster abstract published in Proceedings of Women in Sciences Summer Research, Smith College, September, 2009

Yang Li, Naomi Fox, Filip Jagodzinski and Ileana Streinu, *Protein Flexibility Analysis: A Friendly Interface*, Poster abstract published in [Proceedings of Celebrating Collaborations 2009](#), Smith College, April, 2009

Yang Li, Naomi Fox, Filip Jagodzinski and Ileana Streinu, *Developing GUI Front-end and Output Visualization for Protein Flexibility Analysis Tool*, Poster abstract published in Proceedings of Women in Sciences Smith Summer Research, September, 2008

Teaching Experience

Instructor: Learning from Data **September 2019 - Present**
Tsinghua-Berkeley Shenzhen Institute

Co-Lecturer: Learning from Data **September - December 2017**
Tsinghua-Berkeley Shenzhen Institute

Guest Lecturer: Hybrid Design and Smart City **July 2017**
Tsinghua-Berkeley Shenzhen Institute

Course Assistant: Design and Analysis of Algorithms **January - March 2016**
Computer Science Department, Stanford University

Course Assistant: Mathematical Foundation of Computer Science **January - March 2014,**
Computer Science Department, Stanford University **September - December 2015**

Teaching Assistant: Data Structure **January - May 2008**
Computer Science Department, Smith College

Volunteer and Educational Activities

Guest Speaker

August 2019

Women in Leadership Conference, Shenzhen Charity Federation

Shared personal experience and career advice in a charity fundraising event for the "Educate Girls" campaign hosted by Captivating International Fundation and Shenzhen Charity Federation.

Student Liaison

September 2010 - May 2011

Computer Science Department, Smith College

- Organized student events such as guest lectures and movie nights
- Publicized computer science related events using department mailing list
- Participated in monthly faculty meeting to facilitate student-faculty communication.

Peer Mentor

September 2009 - May 2010

Science Center Peer Mentoring Program, Smith College

- Provided academic and personal support to a first-year mentee through one-to-one meetings and social gatherings
- Completed monthly online report that reflects progress and goals of mentor-mentee relationship

Academic Tutor

February - May 2008

Northampton High School

Provided academic assistant to students with learning disabilities in a classroom setting