

# Hengfeng Li

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## EDUCATION

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**Melbourne, VIC, Australia** **University of Melbourne** **Jul 2012 - Nov 2016**

- Ph.D. in Computer Science and awarded on March 2017.
- Ph.D. Thesis Title: Novel Trajectory Inference Algorithms Using Rich GPS Trajectory Data Sets
- Supervisors: [Prof. Lars Kulik](#) and [Prof. Ramamohanarao \(Rao\) Kotagiri](#)

**Melbourne, VIC, Australia** **University of Melbourne** **Jul 2010 - Jul 2012**

- M.E. in Distributed Computing, Jul 2012. Score: 88.2/100 (Top 5%).
- Graduate Coursework: Distributed Systems; Cluster and Grid Computing; Parallel and Multicore Computing; Declarative Programming; Knowledge Technologies; Web Search and Text Analysis, and etc.

**Beihai, Guangxi, China** **Beihai College of Beihang University** **Sep 2006 - Jul 2010**

- B.E. in Software Engineering, Jul 2010. Score: 86.4/100 (Top 1 out of 118).
- Undergraduate Coursework: C Programming Language; Database Principles and Applications; C# Programming Language; Linux Basis; Java Programming Language; Oracle PL/SQL Programming, and etc.

## PUBLICATIONS

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- Li, H., Kulik, L., & Ramamohanarao, K. (2016). Automatic Generation and Validation of Road Maps From GPS Trajectory Data Sets. In Proceedings of the 25th ACM International Conference on Information and Knowledge Management (**CIKM 2016**) (pp. 1523-1532). ACM.
  - Li, H., Kulik, L., & Ramamohanarao, K. (2015). Robust inferences of travel paths from GPS trajectories. International Journal of Geographical Information Science (**IJGIS**), 29(12), 2194-2222.
  - Li, H., Kulik, L., & Ramamohanarao, K. (2014, November). Spatio-temporal trajectory simplification for inferring travel paths. In Proceedings of the 22nd **ACM SIGSPATIAL** International Conference on Advances in Geographic Information Systems (pp. 63-72). ACM.

## WORK EXPERIENCE

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**Software Developer** **Ladoo Pty. Ltd.** **Oct 2016 - Present**

I mainly work on developing and maintaining a social media archiving platform, Brolly (<https://brolly.com.au/>).

### **Achievements:**

- Architected, built, and tested the new data capture pipeline based on an event-stream architecture with techniques like AWS Kinesis, DynamoDB, Celery, RabbitMQ.
- Implemented new data crawlers for Facebook, Twitter, Instagram, and YouTube.
- Worked on containerizing the monopolistic application into microservices via Docker and AWS ECS.
- Worked on the export service to query and process data from Elasticsearch and generate an offline HTML app.
- Created and maintained a suite of automated tests, including unit tests and integration tests.

**Tech Used:** Python, Celery, Docker, PHP, Symfony, MySQL, AWS (ECS, Kinesis, Dynamodb, SQS, ElastiCache, Elastic Beanstalk, CodePipeline, CodeBuild, etc), Elasticsearch, RabbitMQ, JavaScript, Backbone.js, Flask, Jenkins

**Tutor/Head Tutor** **The University of Melbourne** **Mar 2013 - Jul 2016**

### **Achievements:**

- Head Tutor for COMP90020 Distributed Algorithms (2016 Semester 1).
- Tutor for COMP90038 Algorithms and Complexity (2016 Semester 1).
- Tutor for COMP90018 Mobile Computing Systems Programming (2015 Semester 2).
- Lab demonstrator for GEOM90042 Spatial Information Programming (2015 Semester 1, 2013 Semester 1).
- Tutor for COMP90017 Sensor Networks and Applications (2013 Semester 2).

**Tech Used:** Python, Java, Swift, iOS programming

**PhD Candidate****The University of Melbourne****Jul 2012 - Jun 2016****Research Project:** Road Maps Generation from Imprecise GPS Trajectory Data [Poster'16]**Achievements:**

- Processed and cleaned a large amount of GPS trajectory data.
- Developed an algorithm to infer road maps from GPS trajectory data.
- Designed and implemented evaluation experiments.

**Tech Used:** Python, Numpy, Matplotlib, scikit-learn, Scipy**Research Project:** Mining Large-scale GPS Trajectory Data Sets [Poster'14] [Poster'15]**Achievements:**

- Processed and analyzed map data from OpenStreetMap.
- Designed and developed inference algorithms to reconstruct travel paths from imprecise trajectory data.
- Measured the performance metrics and evaluated the accuracy.

**Tech Used:** Java, Python, Numpy, Matplotlib**Research Project:** Distributed Microscopic Traffic Simulator [Poster'13] [Demo A] [Demo B]**Achievements:**

- Refactored the core part of microscopic vehicle simulation.
- Developed a web application for visualizing the movement of vehicles.
- Processed and analyzed the complex traffic data generated by the simulator.

**Tech Used:** JavaScript, Processing.js, jQuery, OpenStreetMap, Java, Apache Thrift, PHP**Frontend Engineer Intern****Baidu Inc., Beijing, China (PR)****Dec 2011 - Feb 2012****Achievements:**

- Implemented and maintained web pages for important public activities and events.
- Developed an internal tool to manage the usage of multiple development servers.
- Added new features to the internal project management system, such as asynchronous data update and auto-completion.

**Tech Used:** HTML, CSS, JavaScript, PHP, Python, Shell script, jQuery, Ajax.**💡 ADDITIONAL EXPERIENCE AND AWARDS**

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- Best poster awards on the CIS Doctoral Colloquium 2014, 2015, 2016 in the University of Melbourne.
- Excellence in Tutoring Award in the Department of Computing and Information Systems in 2016 SEM1.
- Student volunteer for ACM SIGMOD 2015 (Melbourne, Australia).
- One of Part 2 winners in IBM Master the Mainframe Contest Australia 2012.
- Code contribution to Natural Language Toolkit (NLTK), implementing statistical machine translation models and BLEU evaluation method.
- Recipient of the Dean's Honor Award in the School of Engineering in 2011.
- The 2nd National Award on CUMCM (China Undergraduate Mathematical Contest in Modeling) in 2008.

**📁 TECHNICAL SKILLS**

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- Experience with the general purpose programming languages Java, Python, and C.
- Interest and ability to learn other coding languages as needed.
- Experience with web development on JavaScript, HTML, CSS.
- Prior knowledge on statistical inference and machine learning.
- Extensive knowledge of Unix/Linux environments.
- Strong problem-solving, algorithm design and data structure analysis.