

Nan Li, Ph.D.

Messenger Ads Ranking
Facebook Inc.

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<https://whoisnli.github.io>

Interests

Machine learning and its various applications, such as predictive modeling, NLP, personalized recommendations, and relevance ranking

Education

- 2008.9.5-2013.12.13 **Ph.D. in Computer Science, University of California Santa Barbara (UCSB).**
◇ Research areas: Applied machine learning, data mining, and graph mining
◇ Thesis title: Uncovering Interesting Attributed Anomalies in Large Graphs
◇ Advisor: Prof. Xifeng Yan, xyan@cs.ucsb.edu
◇ GPA: 3.99 / 4.0
- 2005.9.1-2008.7.1 **M.S. in Computer Science, Peking University (PKU).**
◇ Research areas: Data mining, applied machine learning, and text mining
◇ GPA: Overall, 88.8 / 100, Major, 90.0 / 100 (Rank: 1 out of 36)
- 2001.9.1-2005.6.30 **B.S. in Computer Science, Wuhan University (WHU).**
◇ GPA: Overall, 90.0 / 100, Major, 92.5 / 100 (Rank: 1 out of 452)

Work Experiences

- 2019.02-Present **Messenger Ads Ranking, Facebook, Menlo Park, CA,**
Position: Research Scientist/Machine Learning Engineer.
Project areas: In-thread conversation understanding and automation using NLP and statistical modeling
- 2017.04-2019.02 **News Feed Integrity, Facebook, Menlo Park, CA,**
Position: Research Scientist/Machine Learning Engineer.
Project areas: Optimizing human labeling workflows using machine learning
- 2015.02-2017.04 **Core Methods @ Core Data Science, Facebook, Menlo Park, CA,**
Position: Data Scientist (Machine Learning & Algorithms).
Project areas: Ranking systems, embedding models, text classification, spatial clustering, image contour detection
- 2014.05-2015.02 **Applied Machine Learning, Apple, Cupertino, CA,**
Position: Data Scientist.
Project areas: Recommender systems, predictive modeling and analytics for Apple Online Store
- 2013.08-2014.05 **Data Products & Research, oDesk, Redwood City, CA,**
Position: Data Scientist.
Project areas: Building statistical and machine learning models to solve a range of interesting data problems in a large online work marketplaces

- 2012.12-2013.3 **Microsoft Research, Cambridge, UK,**
Position: Research Intern.
• *Project: User skill ranking and competition outcome prediction*
A probabilistic model is proposed to characterize and predict user behaviors for online crowd-sourcing services.
- 2012.6-2012.9 **Bing Indexing and Knowledge Team, Microsoft, Bellevue, WA,**
Position: Research and Software Development Intern.
• *Project: Full-document entity extraction and disambiguation*
Given a knowledge base, the developed entity recognition system applies surface form spotting and entity disambiguation on the entire document.
- 2010.6-2010.9 **Customer Insight & Data Analytics Team, IBM Research, Yorktown Heights, NY,**
Position: Research Intern.
• *Project: Lifetime value maximization using action proxy-driven reinforcement learning*
Customer lifetime value maximization is done by applying reinforcement learning to solve an MDP model. Action proxies are designed to cope with scenarios without the presence of historical action data.
- 2007.9-2007.12 **Business Intelligence Team, IBM Research, Beijing, China,**
Position: Research Intern.
• *Project: Connection network intelligence*
Inter-company relationships, transactions and other financial information are conglomerated into a network, on which various queries can be studied.
- 2006.10-2007.4 **Autonomic Middleware & Service Delivery Team, IBM Research, Beijing, China,**
Position: Research Intern.
• *Project: CUDA resource management project for Java platform*
A review of Java Virtual Machine (JVM), including dynamic class loading, link-time verification, method dispatching, etc.

Selected Publications

Conference Publications.

- **Nan Li**, Huan Sun, Kyle Chipman, Jemin George, and Xifeng Yan, "A Probabilistic Approach to Uncovering Attributed Graph Anomalies", *Proc. of the 2014 SIAM International Conference on Data Mining (SDM'14)*, Philadelphia, Pennsylvania, April 2014.
- **Nan Li**, Ziyu Guan, Lijie Ren, Jian Wu, Jiawei Han, and Xifeng Yan. gIceberg: Towards Iceberg Analysis in Large Graphs. *Proc. of the 2013 IEEE International Conference on Data Engineering (ICDE'13)*, pp. 1021-1032, Brisbane, Australia, April 2013.
- **Nan Li**, Xifeng Yan, Zhen Wen, and Arijit Khan. Density index and proximity search in large graphs. *Proc. of the 2012 ACM International Conference on Information and Knowledge Management (CIKM'12)*, pp. 235-244, Maui, HI, USA, October 2012.
- Arijit Khan, **Nan Li**, Xifeng Yan, Ziyu Guan, Supriyo Chakraborty, and Shu Tao. Neighborhood based fast graph search in large networks. *Proc. of the 2011 International Conference on Management of Data (SIGMOD'11)*, pp. 901-912, Athens, Greece, June 2011.
- **Nan Li** and Naoki Abe. Temporal cross-sell optimization using action proxy-driven reinforcement learning. *Proc. of the ICDM 2011 Workshop on Optimization Based Methods for Emerging Data Mining Problems (ICDMW'11)*, pp. 259-266, Vancouver, Canada, December 2011.
- Charu Aggarwal and **Nan Li**. On node classification in dynamic content-based networks. *Proc. of the 2011 SIAM International Conference on Data Mining (SDM'11)*, pp. 355-366, Phoenix, AZ, USA, April 2011.
- **Nan Li**, Yinghui Yang, and Xifeng Yan. Cross-selling optimization for customized promotion. *Proc. of the 2010 SIAM International Conference on Data Mining (SDM'10)*, pp. 918-929, Columbus, Ohio, USA, April 2010.

Archive.

- Tobias G. Tietke, Xianming Liu, Amy Zhang, Andreas Gros, **Nan Li**, Gregory Yetman, Talip Kilic, Siobhan Murray, Brian Blankespoor, Espen B. Prydz, Hai-Anh H. Dang, "Mapping the world population one building at a time", *CoRR abs/1712.05839* (2017).

Journal Publications.

- Charu Aggarwal and **Nan Li**. On supervised mining of dynamic content-based networks. *Statistical Analysis and Data Mining*, 5(1):16–34, 2012.
- **Nan Li** and Desheng Dash Wu. Using text mining and sentiment analysis for online forums hotspot detection and forecast. *Decision Support Systems*, 48(2):354–368, 2010.
- **Nan Li**, Xun Liang, Xinli Li, Chao Wang, and Desheng Dash Wu. Network environment and financial risk using machine learning and sentiment analysis. *Human and Ecological Risk Assessment*, 15(2):227–252, 2009.

Research Experiences

2009.1-2013.9 **Research Assistant at Department of Computer Science, UCSB,**

Advisor: Prof. Xifeng Yan.

Topics: Data mining, applied machine learning, graph mining, anomaly detection, social network analysis, business analytics and optimization

- *Project area: Graph anomaly detection using machine learning*

a) gAnomaly: a regularized mixture model for anomaly detection in graphs.

- *Project area: Creating algorithms to efficiently and effectively index and query large-scale graphs*

a) gDensity: label-based proximity search via density indexing;

b) gIceberg: graph iceberg search via local aggregate scoring.

2005.11-2008.7 **Research Assistant at Department of Computer Science, PKU,**

Advisor: Prof. Xun Liang.

Topics: Data mining, applied machine learning, and text mining

- *Project: How the Internet influences stock markets*

Correlations between online financial news and volatility exhibited by both stock price and trading volume time series are modeled.

- *Project: Web sentiment analysis*

Correlations between text sentiment and online social network patterns are investigated in order to efficiently detect ongoing and forecast incoming events.

Academic Activities & Awards

Workshops.

- Speaker/Attendee
- 2012 Grace Hopper Celebration of Women in Computing, Baltimore, MD, Oct 3-6, 2012.
 - Invited speaker at 2009 Google Workshop for Women Engineers, Mountain View, CA, Jan 22-25, 2009.
 - 2009 Grad Cohort Program, San Mateo, CA, Mar 27-28, 2009.

Reviewer **Journals.**

IEEE Transactions on Neural Networks, Journal of Neurocomputing.

Conferences.

VLDB'14, KDD'13, WWW'13, ICDM'12, SIGMOD'11, SDM'11, KDD'10, SDM'10, SIGMOD'10, ICDM'10, ICDM'09, ICDE'09, ISNN'07.

- 2012 2012 CIKM Student Travel Grant
- 2012 2012 Grace Hopper Scholarship
- 2011 2011 SDM Conference Travel Award
- 2010 2010 SDM Conference Travel Award
- 2008-2009 UCSB Department of Computer Science Merit Fellowship
- UCSB Department of Computer Science Teaching Assistantship
- 2006 PKU "DongShi DongFang" Scholarship for Outstanding Students
- 2004 WHU "Huawei" Scholarship for Outstanding Students
- 2001-2004 WHU Scholarships of WHU for Outstanding Students
- WHU Merit Students of Excellence of WHU