

# 林一施

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## 教育背景

- 2013/8–2017/7 **博士**，香港中文大学计算机科学与工程学系  
研究方向：网络科学（社交与信息网络中的算法和数据挖掘、大规模图算法）  
导师：吕自成教授（Prof. John C.S. Lui）
- 2009–2013 **工学学士**，中国科学技术大学计算机科学与技术学院  
GPA: 4.01/4.30，专业排名: 1/106

## 工作经历

- 2017/7—至今 **研究员**，腾讯-微信事业群
- 2015/7–2015/9 **研究实习生**，微软亚洲研究院理论组  
研究项目：社交网络中影响力传播的优化与提升  
实习导师：陈卫
- 2013–2016 **助教**，香港中文大学  
负责本科及研究生课程的课程讲解、作业设计及答疑  
参与课程：机器学习概论、网络科学导论、工程数学、程序设计

## 研究项目

- ICDE '17 **社交网络中影响力传播的优化与提升：算法及分析**
- 研究当已知社交网络的结构和病毒式营销的“种子用户”时，如何制定促销策略（如通过提供折扣以提高部分用户的购买概率），使得最终购买目标产品的用户最多（即病毒式营销的传播范围最广）
  - 抽象后的优化问题为 NP 难，目标函数的计算为 #P 难
  - 设计了一个可按需在近似比与执行效率间进行权衡的近似算法
- Performance '15 **多实体竞争传播模型下基于有限信息的影响力最大化算法框架**
- 研究在已知竞争对手部分营销策略的情况下，为了吸引更多的目标群体，公司应如何寻找“种子用户”进行病毒式营销
  - 抽象后的优化问题为 NP 难，目标函数的计算为 #P 难
  - 设计了高效的近似算法框架，该框架 (1) 适用于一系列已提出的多实体竞争传播模型；(2) 可按需在近似比与执行效率间进行权衡
- ASONAM '15 **大规模动态网络中最短距离查询的 I/O 高效算法**
- 利用 2-Hop 索引 (2-Hop Labeling 或 2-Hop Index) 实现大规模图上的点对点距离查询
  - 研究当网络动态增长时，如何快速且准确地返回对任意点对间最短距离的查询结果
  - 设计并实现了 I/O 高效的算法框架：给定初始网络的 2-Hop 索引，该框架 (1) 可在网络动态变化时快速更新索引；(2) 即使更新尚未完成，亦可高效地查询任意点对间的最短距离
- SITIS '13 **复杂网络下信息与疾病传播的建模与分析**
- 扩展经典的 SIS 模型 (Susceptible-Infected-Susceptible Model) 为一个一般化的 SIS 模型
    - S (susceptible): 如传染病模型中的“健康”或病毒式营销中的“未购买”
    - I (infected): 如传染病模型中的“感染”或病毒式营销中的“已购买”
  - 理论分析了在一般化 SIS 模型中实体（如信息或病毒）可大规模传播的必要条件，并通过仿真实验对理论结果进行验证

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## 论文

### 会议论文

- [1] **Yishi Lin**, Wei Chen, and John C.S. Lui. Boosting information spread: An algorithmic approach. *Accepted for publication in IEEE International Conference on Data Engineering (ICDE)*, 2017.
- [2] **Yishi Lin** and John C.S. Lui. Analyzing competitive influence maximization problems with partial information: An approximation algorithmic framework. *Performance Evaluation (also accepted in the IFIP W.G. 7.3. Performance Conference, 2015)*, 2015.
- [3] **Yishi Lin**, Xiaowei Chen, and John C.S. Lui. I/O efficient algorithms for exact distance queries on disk-resident dynamic graphs. In *Proceedings of the 2015 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM)*, 2015.
- [4] Silei Xu, **Yishi Lin**, Hong Xie, and John C.S. Lui. A provable algorithmic approach to product selection problems for market entry and sustainability. In *Proceedings of the 26th International Conference on Scientific and Statistical Database Management (SSDBM)*. ACM, 2014.
- [5] **Yishi Lin**, John C.S. Lui, Kyomin Jung, and Sungsu Lim. Modeling multi-state diffusion process in complex networks: Theory and applications. In *Proceedings of the 2013 International Conference on Signal-Image Technology & Internet-Based Systems (SITIS)*, 2013.

### 期刊论文

- [6] **Yishi Lin**, John C.S. Lui, Kyomin Jung, and Sungsu Lim. Modelling multi-state diffusion process in complex networks: theory and applications. *Journal of Complex Networks*, 2014.

### 在投论文

- [7] Byeongjin Choe, **Yishi Lin**, Sungsu Lim, John C.S. Lui, and Kyomin Jung. Efficient approximation of opinion spreading in general social networks.

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## 荣誉及获奖情况

### 奖学金

- 2015 微软学者奖学金提名奖
- 2013–2017 香港政府博士研究生奖学金 (Hong Kong PhD Fellowship Scheme)
- 2012 中国科学技术大学第 32 届郭沫若奖学金
- 2012 Google 中国 Anita Borg 计算机学科女性奖学金
- 2011 国家奖学金

### ACM/ICPC

- 2011 Google 杯 ACM/ICPC 上海复旦邀请赛, 金牌
- 2011 ACM/ICPC 国际大学生程序设计竞赛亚洲预选赛大连赛区, 银牌
- 2010 ACM/ICPC 国际大学生程序设计竞赛亚洲预选赛天津赛区, 银牌
- 2010 ACM/ICPC 国际大学生程序设计竞赛亚洲预选赛杭州赛区, 铜牌

### 其他

- 2015 Student Travel Grants for IFIP Performance 2015

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## 技能

- 专业 熟练掌握 C/C++, 了解 R, MatLab 及 Python
- 英语水平 较好的英语口语、阅读、写作能力, 托福 106 分 (总分 120)

# Yishi Lin

Ph.D. in Computer Science and Engineering

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## Education

- 2013–2017 **Ph.D., Computer Science and Engineering**, *The Chinese University of Hong Kong*.  
*Thesis*: Information Diffusion and Distance Query in Large-Scale Networks  
*Research interests*: information diffusion, influence maximization, complex networks, graph algorithms  
*Advisor*: Prof. John C.S. Lui
- 2009–2013 **B.E., Computer Science and Technology**, *University of Science and Technology of China*.  
GPA: 4.01/4.30, Rank: 1/106

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## Experience

- 2017–present **Researcher**, *WXG, Tencent*.
- 2015 **Research Intern**, *Theory Group, Microsoft Research Asia*.  
Research on boosting influence spread in social networks, mentored by Wei Chen
- 2013–2016 **Teaching Assistant**, *The Chinese University of Hong Kong*.  
Teaching assistant for undergraduate/postgraduate courses titled “Fundamental of Machine Learning”, “Introduction to Network Science”, “Engineering Mathematics III”, “Problem Solving By Programming”  
Designed and graded assignments, held weekly tutorials, laboratory sessions, and office hours

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## Selected Research Projects

- ICDE '17 **Boosting Information Spread: An Algorithmic Approach**
- Studied how to offer incentives to customers so to boost the information spread of “initial adopters” and success in viral marketing campaigns
  - Proposed approximation algorithms with the data-dependent approximation guarantee
  - Provided theoretical analysis and extensive performance evaluation
- Performance '15 **Analyzing Competitive Influence Maximization Problems with Partial Information**
- Studied how to target influential customers as “initial adopters” so to success in competitive viral marketing campaigns
  - Proposed a general approximation algorithm that works for all specific instances of the general “Competitive Influence Maximization with Partial information” problem
  - Provided theoretical analysis and extensive experimental evaluation
- ASONAM '15 **I/O Efficient Algorithms for Exact Distance Queries on Disk-Resident Dynamic Graphs**
- Studied how to answer shortest distance queries on disk-resident dynamic graphs
  - Designed an I/O efficient framework that is able to (1) construct and maintain an 2-hop distance index of a dynamic graph, and (2) answer distance queries efficiently
  - Presented how to answer distance queries on the latest snapshot of the dynamic network based on outdated index and a set of new edges
  - Provided theoretical analysis and extensive experimental evaluation
- SITIS '13 **Modeling Multi-state Diffusion Process in Complex Networks**
- Proposed a “generalized Susceptible-Infected-Susceptible (SIS) model”
  - Determined which initial condition leads to or prevents the outbreak of information or virus using the mean-field analysis technique
  - Provided theoretical analysis and simulation results

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## Publications

### Conference

- [1] **Yishi Lin**, Wei Chen, and John C.S. Lui. Boosting information spread: An algorithmic approach. *Accepted for publication in IEEE International Conference on Data Engineering (ICDE)*, 2017.

- [2] **Yishi Lin** and John C.S. Lui. Analyzing competitive influence maximization problems with partial information: An approximation algorithmic framework. *Performance Evaluation (also accepted in the IFIP W.G. 7.3. Performance Conference, 2015)*, 2015.
- [3] **Yishi Lin**, Xiaowei Chen, and John C.S. Lui. I/O efficient algorithms for exact distance queries on disk-resident dynamic graphs. In *Proceedings of the 2015 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM)*, 2015.
- [4] Silei Xu, **Yishi Lin**, Hong Xie, and John C.S. Lui. A provable algorithmic approach to product selection problems for market entry and sustainability. In *Proceedings of the 26th International Conference on Scientific and Statistical Database Management (SSDBM)*. ACM, 2014.
- [5] **Yishi Lin**, John C.S. Lui, Kyomin Jung, and Sungsu Lim. Modeling multi-state diffusion process in complex networks: Theory and applications. In *Proceedings of the 2013 International Conference on Signal-Image Technology & Internet-Based Systems (SITIS)*, 2013.

#### Journal

- [6] **Yishi Lin**, John C.S. Lui, Kyomin Jung, and Sungsu Lim. Modelling multi-state diffusion process in complex networks: theory and applications. *Journal of Complex Networks*, 2014.

#### Manuscript

- [7] Byeongjin Choe, **Yishi Lin**, Sungsu Lim, John C.S. Lui, and Kyomin Jung. Efficient approximation of opinion spreading in general social networks.

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## Honors & Awards

- Scholarships
  - Nomination Award of the Microsoft Research Asia Fellowship (13 Fellowship winners, and 16 Nomination Award winners), 2015
  - Hong Kong PhD Fellowship, 2013–2017
  - Guo Moruo Scholarship of USTC (the highest honor for undergraduates in USTC), 2012
  - Google China Anita Borg Scholarship, 2012
  - National Scholarship of China, 2011
- ACM-ICPC
  - Gold Medal, Google Cup ACM-ICPC China Shanghai Fudan Invitational Programming Contest, 2011
  - Silver Medal, The ACM-ICPC Asia Regional Contest, Dalian Site, 2011
  - Silver Medal, The ACM-ICPC Asia Regional Contest, Tianjin Site, 2010
  - Bronze Medal, The ACM-ICPC Asia Regional Contest, Hangzhou Site, 2010
- Others
  - Student Travel Grants for IFIP Performance 2015

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## Skills

- Languages
  - Use C/C++ in most projects, familiar with R, Python and MatLab
- Others
  - Native in Chinese, professional working proficiency in English