

# HUANLE XU

## CONTACT

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Postdoc Fellow  
Department of Information Engineering  
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## EDUCATION

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**The Chinese University of Hong Kong**

Aug. 2012 - Aug. 2016

Ph.D. in Information Engineering  
Dissertation Advisor: Prof. [Wing Cheong Lau](#),

**Shanghai Jiao Tong University**

Sep. 2008 - Jun. 2012

BSc.(Eng). in Information Engineering  
Ranking: Top 8%

## RESEARCH EXPERIENCE

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**The University of Texas at Austin**

Sep. 2015 - Feb. 2016

*Visiting Scholar in ECE Department*

*Advisor: Prof. [Gustavo de Veciana](#)*

- Design online resource allocation policies in big data processing clusters, combining redundant execution with opportunistic checkpointing so as to minimize the overall job delays.

## RESEARCH INTERESTS

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- Design, Implementation, Performance Optimization in Big Data Processing Systems
- Online Learning with Bandit Problems
- Algorithm and Protocol Design in Decentralized Social Networks
- Graph Algorithm Design under Parallel Processing Frameworks
- Distributed Storage Codes Design

## RECENT RESEARCH PROJECTS

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### Online Algorithm Design in the Bandit Setting

- Design online learning algorithms to mitigate machine service variability from a bandit perspective.
- Design Task Assignment policy in Crowdsourcing Environment using linear contextual bandits.

### Speculative Execution Mechanism in Big Data Processing Systems

- Design and implement resource allocation modules under MapReduce/ Hadoop YARN.
- Plug in speculative execution schemes to enhance fault tolerance computing and reduce job response time.

### Resource Allocation Algorithms for Large-Scale Clusters with Performance Guarantees

- Combine Job scheduling and speculative execution to maximize system utility, which is a combination of job response time and computation cost.
- Design task cloning algorithms with competitive performance bounds to reduce job response time.

### Protocol Design and Performance Analysis for Decentralized Social Networks

- Design a message dissemination protocol in Decentralized Social Networks to maximize system utility from an optimization perspective.

## PUBLICATIONS

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1. **Huanle Xu**, Gustavo de Veciana, Wing Cheong Lau and Kunxiao Zhou, “Online Job Scheduling with Redundancy and Opportunistic Checkpointing: A Speedup-Function-Based Analysis”, in IEEE Transactions on Parallel and Distributed Systems (IEEE TPDS), accepted for publication, Sep 2018.
2. **Huanle Xu**, Wing Cheong Lau, Zhibo Yang, Gustavo de Veciana and Hanxu Hou, “Mitigating Service Variability in MapReduce Clusters via Task Cloning: A Competitive Analysis”, in IEEE Transactions on Parallel and Distributed Systems (IEEE TPDS), Vol.18, Issue 10, Oct 2017.
3. **Huanle Xu** and Wing Cheong Lau, “Optimization for Speculative Execution in Big Data Processing Clusters”, in IEEE Transactions on Parallel and Distributed Systems (IEEE TPDS), Vol.28, Issue 2, Feb 2017.
4. Zhibo Yang, **Huanle Xu\***, Jianyuan Deng, Chen Change Loy and Wing Cheong Lau, “Robust and Fast Decoding of High-Capacity Color QR Codes for Mobile Applications”, in IEEE Transactions on Image Processing, accepted for Publication, July 2018.
5. **Huanle Xu**, Gustavo de Veciana and Wing Cheong Lau, “Addressing Job Processing Variability Through Redundant Execution and Opportunistic Checkpointing: A Competitive Analysis”, in IEEE Infocom 2017.
6. **Huanle Xu** and Wing Cheong Lau, “Task-Cloning Algorithms in a MapReduce Cluster with Competitive Performance Bounds”, in IEEE ICDCS 2015.
7. **Huanle Xu** and Wing Cheong Lau, “Optimization for Speculative Execution in a MapReduce-like Cluster”, in IEEE Infocom 2015.
8. **Huanle Xu**, Pili Hu, Wing Cheong Lau, Qiming Zhang and Yang Wu, “DPCP: A Protocol for Optimal Pull Coordination in Decentralized Social Networks”, in IEEE Infocom 2015.
9. **Huanle Xu**, Ronghai Yang, Zhibo Yang and Wing Cheong Lau, “Solving Large Graph Problems in MapReduce-Like Frameworks via Optimized Parameter Configuration”, in the 15th International Conference on Algorithms and Architectures for Parallel Processing (ICA3PP), 2015.
10. **Huanle Xu** and Wing Cheong Lau, “Speculative Execution for a Single Job in a MapReduce-like System”, in IEEE International Conference on Cloud Computing (IEEE Cloud), 2014.
11. **Huanle Xu** and Wing Cheong Lau, “Resource Optimization for Speculative Execution in a MapReduce Cluster” (PhD Forum), in IEEE ICNP 2013.
12. Ruohan Gao, **Huanle Xu**, Pili Hu and Wing Cheong Lau, “Accelerating Graph Mining Algorithms via Uniform Random Edge Sampling”, in IEEE ICC 2016.
13. Kenneth W. Shum, Hanxu Hou, Minghua Chen, **Huanle Xu** and Hui Li, “BASIC Codes: Low-Complexity Regenerating Codes for Distributed Storage Systems”, in IEEE International Symposium on Information Theory (IEEE ISIT), 2014.

## HONORS/ AWARDS

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| • Reaching Out Award of CUHK  | May 2016  |
| • Overseas Research Attachment Programme Award of CUHK                | Oct 2015  |
| • Student Travel Grant for MLSS Beijing                               | June 2014 |
| • Student Travel Grant for ICNP                                       | Oct 2013  |
| • 1st Prize in National Mathematical Contest in Modeling              | Nov 2011  |
| • 3rd Prize in National Mathematical Tournament in Modeling (23/1772) | May 2011  |

## GRADUATE COURSEWORK

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Information Theory  
Random Process  
Big Data Analytics  
Optimization in Networks and Systems

Foundations of Optimization  
Randomness and Computation  
Machine Learning

## TEACHING ASSISTANT EXPERIENCES

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Signal and Systems  
Principles of Communication Systems  
Advanced Topics in Cloud Computing  
Operation and Optimization Methods

Networking Protocols and Systems  
Telecommunication Switching and Network Systems  
Big Data Systems and Information Processing

## SKILLS

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- C/C++, Matlab, Java, Python
- Latex, Git

## PROFESSIONAL SERVICES

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- Reviewer for IEEE Infocom, IEEE ICC, IEEE Globecom
- Student Volunteer for IEEE Infocom 2015
- Student Volunteer for ACM Sigcomm 2013

## REFERENCES

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Prof. Wing Cheong Lau (Dissertation Advisor)  
Director of Mobile Technologies Center  
Dept. of Information Engineering  
The Chinese University of Hong Kong  
Shatin, N.T., Hong Kong  
Email: [wclau@ie.cuhk.edu.hk](mailto:wclau@ie.cuhk.edu.hk)  
Tel: +852 3943-8356

Prof. Gustavo de Veciana (IEEE Fellow)  
Dept. of Electrical and Computer Engineering  
The University of Texas at Austin  
1 University Station C0803  
Austin, TX 78712-0240  
Email: [gustavo@ece.utexas.edu](mailto:gustavo@ece.utexas.edu)  
Tel: +1 512-471-1573

Prof. Dah Ming Chiu (IEEE Fellow)  
Dept. Information Engineering  
The Chinese University of Hong Kong  
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