Yeow-Khiang Chia

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Research Interests

Information Theory, Machine Learning and Signal Processing, Optimization, Data Analytics

Education

Stanford University
Ph.D. in Electrical Engineering, January 2012
Thesis topic: Multi-terminal Secrecy and Source Coding
GPA: 4.0/4.0
Advisers: Profs. Abbas El Gamal and Tsachy Weissman
Thesis Committee: Profs. Thomas Cover and Ada Poon

Stanford University
M.S. in Electrical Engineering, January 2012, GPA: 4.0/4.0

Imperial College, London
M.Eng. (First Class Honours) in Electrical Engineering June 2001
Thesis topic: Lyapunov methods for adaptive gain control

Professional Experience

Research Staff Member, **IBM Research Singapore**. June 2015 - Current

- Principal investigator for project between Maritime and Port Authority of Singapore (MPA) and IBM in developing a sense-making and predictive analytics system for MPA. Project involves using data analytics and machine learning to enhance MPA's operations in the Maritime domain
- Research on data analytics and signal processing for road networks. Co-developed an adaptive sampling algorithm for efficient collection, and accurate estimation, of traffic information in road networks. Patent filed in the United States

Scientist II, **Data Analytics Department, Institute for Infocomm Research, Singapore**
April 2014 - May 2015. Working on the following projects

- Financial and Audit Analytics for DBS Singapore. Project is part of DBS-I2R Joint laboratory.
- Financial Analytics and Algorithms for commodity trading. Project is a joint project with Wealth Sciences Pte Ltd and Straits Financial LLC.
- Signal processing algorithms for Book Sequencing from RFID time series readings. Joint project with National Library Board of Singapore.

Scientist I, **Advanced Communication Department, Institute for Infocomm Research, Singapore**. Feb 2012 - April 2014.
Worked on the following projects: i) Energy resource optimization in cellular networks with renewable energy resources; ii) Fundamental Information Theoretic limits of network communication systems.

Research Assistant, **El Gamal Research Group, Stanford University**
September 2006 - December 2011. PhD thesis research on Network Information Theory

Visiting Research student, Prof. Zhang Lin's group, **Tsinghua University, China**
March 2010 - May 2010. Worked on Throughout and Delay scaling in wireless mobile networks

Summer Intern, **Ji Research Group,Stanford University**
June 2007- September 2007. Worked with Profs. Hanlee Ji and Tsachy Weissman on signal processing for shotgun DNA sequencing

Research Attachment at **Institute for Infocomm Research, Singapore**
August 2005 - August 2006. Worked with on signal processing for localization

Strategic Planning Executive, **Ministry of Home Affairs, Singapore**
April 2003 - July 2005. Responsible for Manpower, Budget and planning policies.

Summer intern at **Center for Imaging, Remote Sensing and Processing (CRISP)**
July 2000 - September 2000. Worked on image processing algorithms for satellite images

Awards and Honors

Institute of Engineers Singapore (IES) Prestigious Engineering Achievement Award 2015 for project "The Future of Audit: Predictive Analytics on Irregularities and Risks in Bank Branches". Joint project between Institute for Infocomm Research and DBS Bank

IEEE Transactions on Communications Exemplary Reviewer 2016

Stanford Graduate Fellowship, 2009 - 2011

Singapore Agency for Science, Technology and Research (A*STAR) National Science Scholarship, 2006-2011

IEE prize for distinction (best all round student) in the four years degree course at Department of Electrical and Electronics Engineering, Imperial College. June 2001

Singapore Public Service Commission scholarship for undergraduate studies at Imperial College, 1997-2001

Skills

Please see the long version for a full list of Masters and PhD level courses taken at Stanford University, as well as online courses taken with Coursera, edX and Udacity. Courses cover the following areas

- Information Theory and Probability Theory
- Machine Learning and Signal Processing, including Deep Learning
- Mathematical Optimization and Discrete Algorithms
- Control Theory, Linear Dynamical Systems and Stochastic Systems
- Game Theory and Economics

Programming skills and experience: Proficient in **Python**, **R**, **Java**, **Matlab**, **C++**

Publications and Patents

A full list of patents and publications is given in the long version, or the following website: `http://ykchia.github.io/publications.html`

Teaching Experience

Teaching assistant for courses on Signal Processing (2011, Instructor: Prof. Tsachy Weissman) and Information Theory (2010, Instructor: Prof. Abbas El Gamal)

Professional Activities

Reviewer since 2009 for the IEEE journals and conferences: Information Theory, Communications, Wireless Communications, Information Security and Forensics

References

Available on request. Please see Appendix C for a list of potential referees