John PANG Zhen Fu

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EDUCATION

California Institute of Technology — **Pasadena, CA**
PhD in Computing and Mathematical Sciences — *September 2014 - July 2019*

- Thesis: Online Platforms in Networked Markets: Transparency, Anticipation and Demand Management
- Amori Outstanding Dissertation Award for Computing and Mathematical Sciences
- National Science Scholarship (Ph.D)

Nanyang Technological University — **Singapore**
Bachelor of Science in Mathematical Sciences (Pure Mathematics) — *September 2010 - December 2013*

- First Class Honors
- Accelerated Bachelors Program
- A*STAR Undergraduate Scholarship

WORK EXPERIENCE

Institute for High Performance Computing, A*STAR — **Singapore**
Research Scientist — *October 2020 - Present*

- Model and analyze critical systems under various national targets for vehicular electrification

Software Technology and Innovation Center, Schlumberger — **Menlo Park, CA, USA**
Data Scientist — *July 2019 - August 2020*

- Proof-of-Concept (PoC) Machine Learning Projects for Oil and Gas Industry
- Presented at the 2019 Reservoir Symposium (internal technical conference)
- Finalist at the 2020 FIZZ Symposium (internal technology conference)

Software Technology and Innovation Center, Schlumberger — **Menlo Park, CA, USA**
Data Science/Machine Learning Intern — *Summer 2017, 2018*

- (2018) Developed framework for the optimal well placement problem and implemented on an OpenAI gym environment; designed RL algorithms to automate simulations for decision making under uncertainty.
- (2017) Apply machine learning and signal processing algorithms for high-resolution, high-frequency time-series classification, with applications to pump prognostics and health management.

TEACHING & MENTORING EXPERIENCE

- Co-Supervisor, Capstone Project 2022-2023 (Jonathan Chia, Yale-NUS MCS)
- Supervisor, A*STAR JC Attachment 2022 (Michelle Che, RI)
- Lecturer, 40.316 Game Theory, Singapore University for Technology and Design (SUTD), Summer 2022
- Supervisor, A*STAR JC Science Award 2021 (Zhang Juntao, RI)
- Mentor, cal:hacks, University of California, Berkeley, April 2020
- CMS Graduate Teaching Fellow, Caltech, AY 2018-2019
- Supervisor (Siraput Jongarumrungrueng, Caltech), Internship Program, Schlumberger, Summer 2019.
- Co-Supervisor (Mughda Bhusari, UC Berkeley), Internship Program, Schlumberger, Summer 2019.
- Teaching Assistant, CS144 Network Economics and Structure, Caltech, Winter 2015-2016.
- Teaching Assistant, ACM104 Linear Operator Theory, Caltech, Fall 2015-2016.
- Teaching Assistant, Calculus for Physics and Chemistry, NTU, Semester 1, 2013-2014.
- Teaching Assistant, Programming for Scientists, NTU, Semester 2, 2012-2013.
- Research Mentor, Victoria School, 2013

RESEARCH EXPERIENCE

California Institute of Technology — **Pasadena, CA**
Graduate Student — *September 2014 - July 2019*
- Contrasted online platform designs under a networked Cournot model with regards to transparency.
- Designed load-side distributed secondary frequency regulation using primal-dual algorithms.
- Collaborated on multiple other projects in learning, online optimization and approximation algorithms.

University of Illinois, Urbana-Champaign — **Urbana, IL**
Visiting Researcher — *April 2019*
- Analyzed the economic impact of demand management under a networked Stackelberg model.
- Extended previous known results for networked competition accounting for anticipation.

Chinese University of Hong Kong — **Shatin, Hong Kong**
Visiting Researcher — *May 2018*
- Formulated a novel, and provably optimal, competitive ratio pursuit algorithm.
- Applicable for generalizations of the classical one-way trading problem.

Agency for Science, Technology and Research — **Singapore**
IHPC Research Engineer — *December 2013 - August 2014*
- Contrasted different network design models from deliberate city-planning transportation networks.
- Data analysis and GUI implementation for household forecasting to reduce supply-demand gap.
- Developed and analyzed car-following models and animated "stop-and-go" phenomenon.

Agency for Science, Technology and Research — **Singapore**
I2R Research Intern — *June 2012 - August 2012*
- Designed Mixture of Gaussian Trees (MoGT) model for parsimonious oversampling with applications to multi-modal imbalanced time-series classification problems.

AWARDS AND ACHIEVEMENTS

- Ministry of Trade and Industry (MTI) Firefly Borderless Award (Silver), 2022
- Schlumberger Out of the Ordinary (O2) Award for Inspirational Attitude, 2020
- Finalist, Schlumberger FIZZ Symposium, 2020
- Judge, hack:now Global Hackathon for Covid-19 Pandemic, 2020
- Presentation at Schlumberger Production Platform Reservoir Symposium Data Challenge, 2019
- Amori Outstanding Doctoral Dissertation Award in Computing and Mathematical Sciences, 2019
- Runner-up, Southern California Citadel Datathon, November 2017
- National Science Scholarship — Full PhD Fellowship, 2014
- Judge and Organizer, Singapore National Science Challenge, 2014
- First Class Honors, NTU, 2013
- Accelerated Bachelor Program, NTU, 2013
- A*STAR Chairman's List AY 2012-2013
- Summer Undergraduate Research Fellow, NTU, 2012
- A*STAR Undergraduate Scholarship — Full B.Sc. Fellowship, 2011

REVIEWER SERVICE

- ACM Transactions on Modeling and Performance Evaluation of Computing Systems (TOMPECS)
- Elsevier Energy
- Elsevier Physica A
- IEEE American Control Conference (ACC)
- IEEE Conference for Decision and Control (CDC)
- IEEE Conference on Industrial Electronics and Applications (ICIEA)
- IEEE Transactions on Intelligent Transportation Systems (T-ITS)
- IEEE Transactions of Networking (ToN)
- IEEE Transactions on Network and Service Management (TNSM)
- IET Cyber Physical Systems (CPS)
- International Conference on Learning Representations (ICLR)
- NeurIPS Machine Learning for the Physical Sciences (ML4PS) Workshop
- PHM Society Conference Annual Conference
- T&F Applied Economics Letters (AEL)
- T&F Emerging Markets, Finance & Trade (EMFT)

Publications

John ZF Pang, Weixuan Lin, Hu Fu, Jack Kleeman, Eilyan Bitar, and Adam Wierman. Transparency and control in platforms for networked markets. *Operations Research*, 2021.

Zachary J Lee, John ZF Pang, and Steven H Low. Pricing electric vehicle charging service with demand charge. In *21st Power Systems Computation Conference (PSCC)*, 2020.

Qiulin Lin, Hanling Yi, John ZF Pang, Minghua Chen, Adam Wierman, Michael Honig, and Yuanzhang Xiao. Competitive online optimization under inventory constraints. In *ACM Sigmetrics*, 2019.

Zhaojian Wang, Feng Liu, John ZF Pang, Steven H Low, and Shengwei Mei. Distributed optimal frequency control considering a nonlinear network-preserving model. *IEEE Transactions on Power Systems*, 34(1):76–86, 2019.

John ZF Pang, Pengcheng You, and Minghua Chen. Temporally networked cournot platform markets. In *Proceedings of the 51st Hawaii International Conference on System Sciences*, 2018.

Linqi Guo, John ZF Pang, and Anwar Walid. Joint placement and routing of network function chains in data centers. In *IEEE INFOCOM 2018-IEEE Conference on Computer Communications*, pages 612–620. IEEE, 2018.

Pengcheng You, Peng Cheng, John ZF Pang, and Steven H Low. Efficient online station assignment for electric vehicle battery swapping. In *Proceedings of the ACM e-Energy Conference*, 2018.

Pengcheng You, John ZF Pang, and Enoch Yeung. Deep koopman controller synthesis for cyber-resilient market-based frequency regulation. *IFAC-PapersOnLine*, 51(28):720–725, 2018.

Pengcheng You, John ZF Pang, and Enoch Yeung. Stabilization of power networks via market dynamics. In *Proceedings of the ACM e-Energy Conference*, 2018.

Pengcheng You, John ZF Pang, Minghua Chen, Steven H Low, and Youxian Sun. Battery swapping assignment for electric vehicles: A bipartite matching approach. In *2017 IEEE 56th Annual Conference on Decision and Control (CDC)*, pages 1421–1426. IEEE, 2017.

John ZF Pang, Linqi Guo, and Steven H Low. Optimal load control for frequency regulation under limited control coverage. In *IREP2017 Symposium*, pages 1–7, 2017.

Weixuan Lin, John ZF Pang, Eilyan Bitar, and Adam Wierman. Networked cournot competition in platform markets: Access control and efficiency loss. In *2017 IEEE 56th Annual Conference on Decision and Control (CDC)*, pages 4606–4611. IEEE, 2017.

John ZF Pang, Hu Fu, Won I Lee, and Adam Wierman. The efficiency of open access in platforms for networked cournot markets. In *IEEE INFOCOM 2017-IEEE Conference on Computer Communications*, pages 1–9. IEEE, 2017.

Linqi Guo, John ZF Pang, and Anwar Walid. Dynamic service function chaining in sdn-enabled networks with middleboxes. In *2016 IEEE 24th International Conference on Network Protocols (ICNP)*, pages 1–10. IEEE, 2016.

Bo Yang, Xihua Xu, John ZF Pang, and Christopher Monterola. Cluster statistics and quasisoliton dynamics in microscopic optimal-velocity models. *Physical Review E*, 93(4):042212, 2016.

Xihua Xu, John ZF Pang, and Christopher Monterola. Asymmetric optimal-velocity car-following model. *Physica A: Statistical Mechanics and its Applications*, 436:565–571, 2015.

John ZF Pang, Nasri Bin Othman, Keng Meng Ng, and Christopher Monterola. Efficiency and robustness of different bus network designs. *International Journal of Modern Physics C*, 26(03):1550024, 2015.

Hong Cao, Vincent YF Tan, and John ZF Pang. A parsimonious mixture of gaussian trees model for oversampling in imbalanced and multimodal time-series classification. *IEEE Transactions on Neural Networks and Learning Systems*, 25(12):2226–2239, 2014.

John ZF Pang, Hong Cao, and Vincent YF Tan. Mogt: oversampling with a parsimonious mixture of gaussian trees model for imbalanced time-series classification. In *2013 IEEE International Workshop on Machine Learning for Signal Processing (MLSP)*, pages 1–6. IEEE, 2013.