

YU TIAN

Mathematical Institute, University of Oxford, Oxford, OX2 6GG

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EDUCATION

University of Oxford

PhD. Mathematics

EPSRC Centre for Doctoral Training for Industrially Focused Mathematical Modelling (InFoMM CDT)

Oxford, UK

Sep. 2018 - Present

University of Manchester

BSc. Mathematics and Statistics (2+2 Dual Degree)

Manchester, UK

Sep. 2016 - Jun. 2018

Beijing Institute of Technology

BSc. Mathematics (2+2 Dual Degree)

Beijing, China

Sep. 2014 - Jun. 2016

HONOURS AND AWARDS

- EPSRC InFoMM CDT Studentship (fully-funded PhD studentship, 2018 – 2022)
- First Prize in China Undergraduate Mathematical Contest in Modelling (Beijing, 09/2016 & 09/2015)
- First-Class People's Scholarship (5% in academia, 2014-2016)
- National Scholarship (5% in academic, research and other activities, 2014-2015)

RESEARCH EXPERIENCE

University of Oxford

PhD Research Project: Role Extraction, Diffusion, and Optimisation on Networks.

Supervisors: Prof. Renaud Lambiotte (Oxford), Dr. Alisdair Wallis, Dr. Sebastian Lautz (Tesco).

Oxford, UK

Oct. 2019 - Present

InFoMM CDT Mini-Project: Inter-District Packaged Gas Optimisation.

Jul. - Sep. 2019

Supervisors: Prof. Raphael Hauser (Oxford), Dr. Peter Connard, Dr. Harsida Jenkins (Air Products)

- Formulated the problem of both inventory management and transshipment of products as a mixed integer programming, and reviewed state-of-the-art techniques.
- Proposed several relaxation methods based on Lagrangian relaxation to improve solving efficiency.

InFoMM CDT Mini-Project: Halo Effect and Demand Transfer on Products.

Apr. - Jun. 2019

Supervisors: Prof. Renaud Lambiotte (Oxford), Dr. Alisdair Wallis (Tesco).

- Devised a method combining Poisson processes with time series analysis to identify the product relationships from aggregated sales data quantitatively.
- Applied regression techniques, and proposed several validation methods on real data.

University of Manchester

Final Project: Model Selection versus Model Averaging in Gaussian Processes.

Supervisor: Prof. Thomas House

Manchester, UK

Feb. - Jun. 2018

- Proposed to apply model averaging technique, via Monte Carlo method, to the parameter estimation phase, and compared it with the classic model selection in real data (code in Python).

ACADEMIC EVENTS

Selected Communications

- **The 10th International Conference on Complex Networks and their Applications (CNA)**, Madrid, Spain. (Nov. 2021)
Contributed talk: A general class of diffusion model and its influence maximisation.
- **Conference on Complex Systems (CCS)**, Lyon, France. (Oct. 2021)
Contributed talk: A network-based approach to extract complements and substitutes from sales data.
- **InFoMM Annual Meeting** (Virtual), University of Oxford, UK. (July 2021)
Invited talk: Halo effect and demand transfer in retail.

- **Oxford Network Seminar** (Virtual), University of Oxford, UK. (May 2021)
Seminar talk: Extracting complements and substitutes from sales data: a network perspective.

Study Groups

- **SIAM-IMA Study Group with Industry**, Edinburgh, UK. (Jun. 2021)
Worked on detecting abnormal performance of wind turbines by machine learning.
- **European Study Group with Industry (ESGI 162)**, Leeds, UK. (Jul. 2020)
Worked on estimating customer lifetime value in the gaming industry using incomplete data.
- **European Study Group with Industry (ESGI 145)**, Cambridge, UK. (Apr. 2019)
Worked on deep learning hardening techniques for image classifier.
- **InFoMM UK Graduate Modelling Camp**, Oxford, UK. (Apr. 2019)

TEACHING AND OTHER EXPERIENCE

University of Oxford

Oxford, UK

Organiser

Oct. 2021 - Present

- Oxford Networks Seminar

Tutor

Oct. 2021 - Dec. 2021

- Introduction to Statistics, Michaelmas Term 2021

Teaching Assistant

Oct. 2019 - Apr. 2020

- Networks, Hilary Term 2020
- Graph Theory, Michaelmas Term 2019

TECHNOLOGY SKILLS

- **Programming:** Proficiency in Python (pandas, numpy, scipy, networkx, statsmodels, scikit-learn etc), MATLAB; Familiarity with R Language, C Language.
- **Optimisation:** MOSEK, Lingo.

PUBLICATIONS AND REPORTS

Publications

2. **Y. Tian** and Renaud Lambiotte. *Unifying Diffusion Models on Networks and Their Influence Maximisation*. arXiv, 2021.
1. **Y. Tian**, Sebastian Lautz, Alisdair Wallis and Renaud Lambiotte. *Extracting complements and substitutes from sales data: a network perspective*. EPJ Data Sci. **10**, 45 (2021).

Technical Reports

2. S. Abrahams, R. Ali, A. Berryman, N. Aishah Hamzah, T. Khang, C. Ng, **Y. Tian**, and H. Yang. *Estimating customer lifetime value (CLV) in the gaming industry using incomplete data*. Report for European Study Group with Industry 162, Leeds, UK, 2020.
1. M. Benning, L. Bonthron, T. Carr, J. Dyer, A. Malip, M. McGuigan, A. Puiu, **Y. Tian**, A. Wendland and L. Yang. *Identifying potential hardening techniques for image classifiers*. Report for European Study Group with Industry 145, Cambridge, UK, 2019.

MEMBERSHIPS

- Society for Industrial and Applied Mathematics (SIAM), Student Affiliate
- Institute of Mathematics and its Applications (IMA), Student Affiliate