Yu Tian

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EDUCATION

University of Oxford **Oxford, UK**

DPhil. Mathematics *Sep 2018 – Present*

- Research Interests: Role extraction, Community Detection and Clustering, Networks and Complex Systems, Data Analytics.
- Supervisor: Prof. Renaud Lambiotte.
- First-Year Training Courses: Mathematical Modelling, Scientific Computing, Mathematical Analytics, Numerical Optimisation, Machine Learning etc.

University of Manchester **Manchester, UK**

BSc. Mathematics and Statistics (2 + 2 Dual Degree) *Sep 2016 – Jun 2018*

- First Class Hons.
- Final Project: Gaussian Processes for Machine Learning, supervised by Prof Thomas House.
- Core Courses: Optimisation and Inverse Problems (MSc), Generalised Linear Models and Survival Analysis (MSc), PDEs, Graph Theory, Matrix Analysis, Markov Processes, Time Series Analysis.

Beijing Institute of Technology **Beijing, China**

BSc. Mathematics (2 + 2 Dual Degree) *Sep 2014 – Jun 2016*

- GPA 3.79/4.
- Core Courses: Calculus, Advanced Algebra, Real and Complex Analysis, Probability, Mathematical Statistics, ODEs, C Language Programming, Numerical Computation Methods.

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 EXPERIENCES

University of Oxford **Oxford, UK**

Supervisor: Prof. Raphael Hauser. Company: Air Products *July - Sep. 2019*

Inter-District Packaged Gas Optimisation

- 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.

Supervisor: Prof. Renaud Lambiotte. Company: Tesco *Apr.- June 2019*

Halo Effect and Demand Transfer on a Small Range of Products

- 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.

European Study Group with Industry 145 **Cambridge, UK**
Company: Defence Science and Technology Laboratory (DSTL) *Apr. 2019*

Deep Learning (DL) Hardening Techniques for Image Classifier

- Investigated and developed well-known DL defense ideas to classic attacks, including preprocessing, universal adversarial training, and generative adversarial networks (GAN).

University of Manchester **Manchester, UK**
Supervisor: Prof. Thomas House *Feb. - Jun. 2018*

Model Selection versus Model Averaging in Gaussian Processes

- Proposed to apply model averaging technique to the parameter estimation phase, and achieved it though Monte Carlo method.
- Compared this overall method with the classical model selection in real data (code in Python).

INVITED/CONTRIBUTED TALKS

- **Contributed Talk** Conference on Complex Systems (CCS), Lyon, France. (Oct. 2021)
- InFoMM Annual Meeting (Virtual), University of Oxford, UK. (July 2021)
- Oxford Network Seminar (Virtual), University of Oxford, UK. (May 2021)
- InFoMM Group Meeting (Virtual), University of Oxford, UK. (Apr. 2021)

TEACHING EXPERIENCES

University of Oxford **Oxford, UK**
Teaching Assistant *Sep. 2019 - Apr. 2020*

- C5.4 Networks, Hilary Term 2020
- B8.5 Graph Theory, Michaelmas Tern 2019

SKILLS

- **IT skills:** Proficiency in Python (pandas, numpy, scipy, networkx, statsmodels, scikit-learn), MATLAB, LaTeX, git; Familiarity with R Language, C Language, MOSEK, Lingo.
- **Languages:** Chinese (native), English (fluent).
- **Interests:** Cycling, Volleyball, Basketball, Football.
- **Music:** Guzheng.

PUBLICATIONS AND REPORTS

Publications

- **Y. Tian**, Sebastian Lautz, Alisdair Wallis and Renaud Lambiotte. *Extracting complements and substitutes from sales data: a network perspective*. Accepted, *EPJ Data Science*, 2021.

Technical Reports

- S. Abrahams, R. Ali, A. Berryman, N. Aishah Hamzah, T. Khang, C. Ng, **Y. Tian**, 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.
- M. Benning, L. Bonthrone, 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.