

Haoyuan Zhang

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EDUCATION BACKGROUND

Queen Mary University of London (QMUL)

London, UK

Ph.D. in Computer Science

Sep. 2015 - Jul. 2019 (Anticipated)

Thesis: A Bayesian-Based Framework for Making Inspection and Maintenance Decisions from Data and Expert Knowledge

Supervisors: Dr. William Marsh, Prof. Norman Fenton, Prof. Martin Neil

The University of Hong Kong (HKU)

Hong Kong

M.Sc. in Industrial Engineering and Logistic Management

Sep. 2013 - Dec. 2014

Thesis: Colour Petri Net-Based Modelling for Integrated Process Planning and Scheduling (obtained the highest grade among the department)

Supervisor: Dr. Tak Nam, Wong

Jinan University (JNU)

Guangzhou, China

B.Mgt. in Electronic Commerce

Sep. 2009 - Jul. 2013

Thesis: Tourism Supply Chain Collaborative Demand Forecasting Model Based on Colour Petri Net (awarded the best undergraduate thesis of Jinan University)

Supervisor: Dr. Bai Hua

PROFESSIONAL EXPERIENCE

Queen Mary University of London & Alan Turing Institute

London, UK

Research Assistant on Project: Knowledge Discovery from Health Use Data (KNIFE)

Apr. 2019 - Aug. 2019

- *Data Processing* - Use PostgreSQL to select cohorts of patients from clinical databases and preprocesses selected cohorts (e.g. missing data imputation)
- *Data Analysis* - Perform Exploratory Data Analysis (EDA), including feature projection (e.g. Principal Component Analysis (PCA)), feature selection (e.g. random forest), Conditional Independence (CI) tests (e.g. mutual information)
- *Model Building and Validation* - Build Bayesian Networks based on elicited medical knowledge and CI tests, fit their parameters with Maximum Likelihood estimates or Bayesian Parameter estimates, and compare the fitted models' performance with other machine learning techniques
- *Application* - Generate synthesis clinical data from the learned models using forward/rejection sampling to bypass the restriction of health data usage

Queen Mary University of London

London, UK

Teaching Assistants of Multiple Modules

Sep. 2016 - Apr. 2019

- Lab/tutorial demonstration and courseworks marking for average 50+ students per module in ECS647U/ECS773P - Bayesian Decision and Risk Analysis, ECS650/ECS789 - Database Systems and ECS401U - Procedural Programming (Java)

Queen Mary University of London

London, UK

Ph.D. Research Committee Representative

Jun. 2016 - Mar. 2018

- Responsible for the liaison between research groups and the public engagement of our group (e.g. outreach initiatives such as Ph.D. induction and research showcases)

Liguo Steel Group (HK) Limited
Logistic Manager Trainee

Hong Kong
Jun. 2014 - Apr. 2015

- Worked on commodity (e.g. iron ore, steel) shipping, trading and financing

Cigna & CMC Life Insurance CO., LTD
IT Intern in the Project Management Team

Shenzhen, China
Jul. 2012 - Sep. 2012

- Assisted in the software development process and was responsible for tracking issues encountered in user acceptance testing

OTHER RESEARCH EXPERIENCE

Data Study Group - Funded by Alan Turing Institute

London, UK

Project: Player Pathways: Understanding Career Paths That Deliver Success for Professional Football Players and Clubs (with PlayerLens)

Dec. 2018

- Used random forest to help club owners understand which features are the most influential features on players' values. These features were later used to support the network analysis performed by other team members

Data Study Group - Funded by Alan Turing Institute

London, UK

Project: Predicting Language Outcome and Recovery After Stroke (PLORAS) (with University College London)

May. 2018

- Led the theme of feature engineering, which includes random forest for feature selection and PCA for feature projection. These features were used by other team members for statistical analysis and recovery prediction
- Performed survival analysis to estimate the probability of whether a patient will recover given a time

Workshop - Funded by Isaac Newton Institute, University of Cambridge

Cambridge, UK

Project: The Nature of Questions Arising in Court That Can Be Addressed via Probability and Statistical Methods

Aug. 2016 - Sep. 2016

- Discussed the applications of statistical methods and probabilistic reasoning in forensic science

PUBLICATIONS

Journal

1. **Haoyuan Zhang** and D. William R. Marsh. Learning from Uncertain Data, Knowledge and Similar Groups: Individualised Multi-State Deterioration Prediction for Infrastructure Asset. Under review at **Information Sciences**.
2. **Haoyuan Zhang** and D. William R. Marsh. Managing Infrastructure Asset: Bayesian Networks for Inspection and Maintenance Decisions Reasoning and Planning. In submission to **Reliability Engineering & System Safety**.
3. **Haoyuan Zhang**, Kaijian Li, Tak Nam Wong, Luping Zhang and Asheem Shrestha. A Colored Petri Net Approach to Aid Integrate Process Planning and Scheduling Optimized by Hybrid Genetic Algorithm and Simulated Annealing. In submission to **Expert Systems with Application**.
4. **Haoyuan Zhang** and D. William R. Marsh, 2018. Generic Bayesian Network Models for Making Maintenance Decisions from Available Data and Expert Knowledge. **Proceedings of the Institution of Mechanical Engineers, Part O: Journal of Risk and Reliability**, 232(5):505-523.
5. Bai H, **Haoyuan Zhang**, 2017. CPN Based Modelling of Tourism Demand Forecasting. **International Journal of Business and Management**, 12(1): 28-35.

Conference

1. **Haoyuan Zhang** and D. William R. Marsh, 2018. Towards A Model-Based Asset Deterioration Framework Represented by Probabilistic Relational Models. In ***European Safety and Reliability Conference 2018 (ESREL 2018)***, pages 671-679 (oral presentation).
2. **Haoyuan Zhang** and D. William R. Marsh, 2016. Bayesian Network Models for Making Maintenance Decisions from Data and Expert Judgment. In ***European Safety and Reliability Conference 2016 (ESREL 2016)***, pages 1056-1063 (oral presentation).
3. **Haoyuan Zhang** and Hua Bai, 2016. Simulation of Tourism Supply Chain Collaborative Demand Forecast. International Conference on Applied Social Science Research. In ***International Conference on Applied Social Science Research (ICASSR 2015)***, pages 659-662.

PROGRAMMING & LANGUAGE SKILLS

- **Programming Language:** Java, R, Python, Scala, HTML
- **Database:** PostgreSQL, MySQL
- **Language:** English, Chinese, Cantonese