

Zhi LING

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EDUCATION

Imperial College London

M.Sc. in Statistics (distinction); GPA: 78.84/100

Thesis: Bayesian modelling of social contact dynamics during COVID-19 (Mark: 85.30/100)

London, UK

Oct 2022 – Oct 2023

University of Glasgow

B.Sc. (First Class Honours) in Statistics; GPA: 20.08/22

Thesis: Bayesian dimensionality reduction using gaussian processes (Mark: 21.00/22)

Glasgow, UK

Sep 2020 – Jun 2022

Zhongnan University of Economics and Law

B.Sc. (Econ) in Economic Statistics; GPA: 3.83/4.0 (91.47/100), rank top 5%

Double degree programme established with University of Glasgow

Wuhan, China

Sep 2018 – Jun 2022

RESEARCH EXPERIENCE

Research Assistant, Imperial College (Advisor: [Dr. Oliver Ratmann](#))

May 2023 – Present

- Proposed a generalized Waring regression model under the Bayesian framework, capable of handling scale-free tails, proneness across different cross-sections, and offering greater flexibility compared to traditional count data models.
- Discovered a heavy-tailed distribution based on confluent hypergeometric function and studies its basic properties.
- Implemented the BNB distribution with analytic derivatives in Stan's C++ interface, reducing the time and memory overhead of automatic differentiation by four orders of magnitude, submitting a pull request to [Stan Math Library](#).
- Constructed a semi-parametric Bayesian hierarchical model and conducted inference on the German COVIMOD study, studying the effect of age, gender, and reporting fatigue in longitudinal surveys. ([Github page](#))
- Preprint is in process, and a [case study](#) on contributing new distributions to Stan has been written.

Research Assistant, University of Glasgow (Advisor: [Dr. Mu Niu](#))

Oct 2021 – Apr 2022

- Reviewed literature on the benefits of introducing kernel methods and variational inference to probabilistic dimensionality reduction models, such as the GP-LVM (Gaussian process latent variable model).
- Verified models capabilities by examining their clustering performance and latent space patterns. Used and customized the [GPy](#) framework to analyze the Chart74K handwritten digits dataset.
- Implemented automatic relevance determination (ARD) for hyperparameter selection and model comparison. Experiments on the COIL-100 image data indicate that variational inference effectively prevents overfitting.

WORK EXPERIENCE

Algorithm Engineer Intern at Causis Investment Co., Ltd.

Sep 2021 – Nov 2021

- Developed an event-driven backtesting framework, including SQL database querying, Python-based interactive dashboards, and API documentation. The system improved the R&D efficiency of the futures department.
- Rewrote two of the slowest-running futures strategies running on the firm's real-time trading server, reducing runtime and memory requirements by 80% with minimal performance impact.
- Developed a transaction signal screening algorithm based on momentum and Ljung-Box test, which improved the strategy performance by 30% after screening.

Analyst Intern at China Galaxy Securities Co., Ltd.

Jul 2020 – Oct 2020

- Constructed a stock market sentiment indicator, and used RNN (LSTM) to extract sentiments from the Internet, which reached a rolling prediction accuracy of 90% for the SSE Composite Index
- Wrote Python incremental crawlers and implemented persistent storage in MongoDB, and captured 20,000 survey reports and 500,000 stock comments.

SKILLS

Programming: *Proficient:* R, Python *Utilize:* C, C++, Shell

Technologies: Git, Stan, Docker, TensorFlow, PyTorch \LaTeX

Languages: Chinese (Native), English (Professional, IELTS 7.0)

Miscellaneous: Principal flutist of ZUEL Wind Orchestra; performed as a soloist at the annual concert.