

SIU LUN CHAU

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EDUCATION

UNIVERSITY OF OXFORD

2018 – 2022 | DPhil in Statistical Machine Learning (3rd year)

- Supervised by Prof. Dino Sejdinovic, Prof. Mihai Cucuringu, and Prof. Xiaowen Dong.
- Research interests include Kernel Methods, Gaussian Processes, Causal Inference, Graph ML, Explainable AI, and Uncertainty Quantification.
- Recipient of the EPSRC & SRC Studentship for DPhil in Statistical Machine Learning.

2017 – 2018 | MMATH Mathematics and Statistics (1st Class Honours)

- Ranked 2nd in the year.
- Distinction in Master's thesis: Modelling Diseases Trajectories with Infinite Mixture of Gaussian Processes.

2014 – 2017 | BA Mathematics and Statistics (1st Class Honours)

- Ranked 1st in the year.
- Distinction in Undergraduate essay: Boosting: AdaBoost and Gradient Boost.

INDUSTRIAL AND RESEARCH EXPERIENCE

EMPIRICAL INFERENCE, MAX PLANCK INSTITUTE OF INTELLIGENT SYSTEMS

Oct 2021 – Present | Research Intern

- Supervised by Dr. Krikamol Muandet
- Investigating the possibility of relaxing restrictive structural assumptions on Instrumental Variable Regressions and devising models to recover the underlying confounded causal effect.

GINI

Oct 2020 – Jan 2021 | Machine Learning Engineer

- Developed a Gaussian Processes based explainable time series model for *giniPredict*, a forecasting tool built for use in Google spreadsheets for decision-makers who aren't specialists.

CATALYST AI

Apr 2019 – Jan 2021 | Machine Learning Consultant

- Developed a crop growth forecasting model using GPs and an optimal irrigation scheduling model using change point detection algorithm.
- Developed a markdown price optimisation model for seasonal sales.

CAMBRIDGE SPARK

Jul 2017 – Present | Machine Learning Content Developer & Teaching Fellow

- Designed ML projects to upskill students and corporates.
- Taught ML modules including Explainable AI, Gaussian Processes, Deep Learning, Python programming, and Recommender Systems.

Oxford Strategy Group Digital

2017 – 2019 | Co-founder & Managing Director

- Launched and managed Oxford's first student-led machine learning consultancy with over 50 consultants, over 30% being PhD students.
- Pitched 6 projects to multinational clients and maintained a diverse portfolio ranging from FTSE100 companies to Tech start-ups.

PUBLICATIONS

RKHS-SHAP: SHAPLEY VALUES FOR KERNEL METHODS | Submitted to AISTATS 2022 (Under Review)

S. Chau, J. Gonzalez, and D. Sejdinovic

- Proposed an efficient model specific robust Shapley value estimation based on kernel mean embeddings.
- Proposed a Shapley regulariser allowing modeller to control feature contribution during learning and demonstrate its application in robust modelling and fair learning.

BAYESIMP: UNCERTAINTY QUANTIFICATION FOR CAUSAL DATA FUSION | NeurIPS 2021

S. Chau, J. Ton, J. Gonzalez, Y. Teh, and D. Sejdinovic

- Proposed Bayesian Interventional Mean Processes (BayesIMP) to estimate average treatment effect and quantify its uncertainty while combining observational data from different sources.
- A Bayesian Conditional Mean Embedding based on vector-valued GP regression is proposed, further establishing the strong connection between kernel methods and Gaussian processes.

DECONDITIONAL DOWNSCALING WITH GAUSSIAN PROCESSES | NeurIPS 2021

S. Chau, S. Bouabid, and D. Sejdinovic

- Proposed a Bayesian solution for statistical downscaling that handles unmatched multi-resolution data through deconditioning.
- Proved the convergence rate of Deconditioning Mean Operator by establishing it as a two-staged reconstruction problem in the function space and utilised distribution regression convergence results.

KERNEL-BASED GRAPH LEARNING FROM SMOOTH SIGNALS: A FUNCTIONAL VIEWPOINT | IEEE

Transactions on Signal and Information Processing over Networks 7, 192-207, 2021

X.Pu, S. Chau, X.Dong, and D. Sejdinovic

- Developed a novel graph learning framework incorporating both node-side and observation-side information, and in particular, covariates that help to explain the dependency structure in graph signals.

LEARNING INCONSISTENT PREFERENCES WITH GAUSSIAN PROCESSES |

Submitted to AISTATS 2022 (Under Review)

S. Chau, J. Gonzalez, and D. Sejdinovic

- We challenged the common rankability assumption in duelling data and proposed a generalisation of the widely used preferential GP, and demonstrated our method are able to capture more expressive latent preferential structures.

SPECTRAL RANKING WITH COVARIATES | arXiv 2005.04035

S. Chau, J. Gonzalez, and D. Sejdinovic

- Proposed ranking algorithms combining insights from spectral ranking and RKHS methods. A fair ranking algorithm based on statistical parity is also proposed.

AWARDS

EPSRC AND MRC STUDENTSHIP FOR DPHIL IN STATISTICAL MACHINE LEARNING

2018 – 2022 | Oxford, UK

OC&C HACKTHON

Champion, 2017 | Oxford, UK

DEPARTMENT OF STATISTICS PRIZE FOR PART B

2017 | Oxford, UK

LADY MARGARET HALL COLLEGE PRIZE

2014 | Oxford, UK

SOFTWARE / LANGUAGE

PROGRAMMING (in order of experience)

- Python, R, Matlab

LIBRARIES

- Pytorch, Scikit-learn, Pandas, Numpy

LANGUAGE

- English (IELTS: 8.0/9.0), Cantonese and Mandarin (Native)