

Kwo Lik Lax Chan

PERSONAL INFORMATION

Date of birth: 07/07/1991

Address: Dipartimento di Studi per l'Economia e l'Impresa Università del Piemonte Orientale "A. Avogadro" Via Perrone, 18 - 28100 Novara

RESEARCH INTERESTS

- Functional data analysis
- U -statistics
- Time series analysis
- Multiple systems estimation
- Multivariate statistics/ Data analytics

PRESENT POSITION

Assistant professor (RTD-A)

02/2022-present |

DISEI, UNIVERSITÀ DEL PIEMONTE ORIENTALE "A. AVOGADRO"

Research theme: Small-Ball probability, Functional data analysis

Scientific advisers: Prof. Enea Bongiorno, Professor Aldo Goia

PAST POSITIONS

Postdoctoral associate

09/2020-01/2022 |

DISEI, UNIVERSITÀ DEL PIEMONTE ORIENTALE "A. AVOGADRO"

Research theme: Small-Ball probability, Functional data analysis

Scientific advisers: Prof. Enea Bongiorno, Professor Aldo Goia

Research Associate

09/2019-03/2020 |

KNOWLEDGE MEDIA INSTITUTE, THE OPEN UNIVERSITY, MILTON KEYNES

Research theme: Time-series analysis, Factorial Hidden Markov Models, Combinatorial optimisation, Data analytics

Scientific adviser: Dr. Danica Greetham

Research fellow

08/2018-07/2019 |

RIGHTS LAB AT THE UNIVERSITY OF NOTTINGHAM, UNITED KINGDOM

Research theme: Multiple systems estimation, Capture-Recapture, heterogeneity, data analytics

Scientific adviser: Sir Bernard W. Silverman, Fellow of the Royal Society

Research assistant

08/2017-08/2018 |

HORIZON INSTITUTE AT THE UNIVERSITY OF NOTTINGHAM, UNITED KINGDOM

Research theme: Clustering, classification, stochastic processes, Bayesian inference

Scientific advisers: Dr. Iker Perez, Dr. Mercedes Torres Torres

EDUCATION

Doctor of Philosophy in Mathematics

2014-2018 |

THE OPEN UNIVERSITY, MILTON KEYNES, UNITED KINGDOM

Thesis title: Continuous spectra for substitution-based sequences

Supervisors: Prof. Uwe Grimm and Dr. Ian Short

Master of Science in Mathematics

2013-2014 |

THE UNIVERSITY OF LIVERPOOL, UNITED KINGDOM

Bachelor of Science in Mathematics with Honours

2010-2013 |

PUBLICATION IN REVIEWED JOURNALS

A LINK FUNCTION SPECIFICATION TEST IN THE SINGLE FUNCTIONAL INDEX MODEL [↗](#)

Lax Chan, Laurent Delsol, Aldo Goia

Accepted at Advances in Data Analysis and Classification (2023)

MULTIPLE SYSTEMS ESTIMATION FOR SPARSE CAPTURE DATA: INFERENTIAL CHALLENGES WHEN THERE ARE NON-OVERLAPPING LISTS [↗](#)

Lax Chan, Bernard W. Silverman, Kyle Vincent

Journal of American Statistical Association (Theory and methods) **116** (535) (2021), 1297-1306

DISCUSSION OF MULTIPLE SYSTEMS ANALYSIS FOR THE QUANTIFICATION OF MODERN SLAVERY: CLASSICAL AND BAYESIAN APPROACHES BY SILVERMAN [↗](#)

Ian Dryden, James Goulding, Simon Preston, Lax Chan

Journal of the Royal Statistical Society: Series A **183** (2020)

SUBSTITUTION-BASED STRUCTURES WITH ABSOLUTELY CONTINUOUS SPECTRUM [↗](#)

Lax Chan, Uwe Grimm, Ian Short

Indagationes Mathematicae **29**(4) (2018), 1072-1086

SPECTRUM OF A RUDIN--SHAPIRO-LIKE SEQUENCE [↗](#)

Lax Chan, Uwe Grimm

Advances in Applied Mathematics **87** (2017), 16-23

PROBLEMS IN STRONG UNIFORM DISTRIBUTION [↗](#)

Kwo Chan¹, Radhakrishnan Nair

Tatra Mt. Math. Publ. **59** (2014), 51-64

A REMARK ON THE DISTRIBUTION OF CHEBYSHEV POLYNOMIALS ON $[-1, 1]$ [↗](#)

Kwo Chan, Radhakrishnan Nair

Uniform Distribution Theory **9** (2014), no.2, 125-134

ABSTRACT IN BOOKS AND CONFERENCES, CONFERENCE PROCEEDINGS AND THESIS

A SPECIFICATION TEST FOR THE SINGLE FUNCTIONAL INDEX MODEL. [↗](#)

Lax Chan

In Book of Abstracts of the 15th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics)(2022)

EVALUATING THE COMPLEXITY OF A FUNCTIONAL TIME SERIES [↗](#)

Enea G. Bongiorno, Lax Chan, Aldo Goia

In Book of Abstracts of the 14th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics)(2021)

ABOUT THE COMPLEXITY OF A FUNCTIONAL TIME SERIES [↗](#)

Enea G. Bongiorno, Lax Chan, Aldo Goia, Philippe Vieu

In Book of Abstracts of the 5th International Workshop On Functional and Operatorial Statistics (2021)

CONTINUOUS SPECTRA FOR SUBSTITUTION-BASED SEQUENCES [↗](#)

Lax Chan

PhD thesis (2018)

SUBSTITUTION-BASED SEQUENCES WITH ABSOLUTELY CONTINUOUS DIFFRACTION [↗](#)

Lax Chan, Uwe Grimm

Journal of Physics: conference series, **809** (2017) 012027

¹This was my registered name when I was at the University of Liverpool.

TECHNICAL REPORT

ON BAYESIAN INFERENCE TASKS WITH INFINITE-STATE JUMP PROCESSES: EFFICIENT DATA AUGMENTATION [↗](#)

Iker Perez, Lax Chan, Mercedes Torres Torres, James Goulding, Theodore Kypraios
arXiv: 1806.02458

PREPRINTS

- Bootstrapping multiple systems estimates to account for model selection (2023)
Available at arXiv:2303.17856
Bernard W. Silverman, Kyle Vincent, Lax Chan
- Detecting the Complexity of a Functional Time Series (2021)
Enea G. Bongiorno, Lax Chan, Aldo Goia

R PACKAGES

SPARSEMSE 2.0.1 [↗](#)

Lax Chan (maintainer and creator), Bernard W. Silverman, Kyle Vincent

TALKS AND POSTER PRESENTATIONS

A specification test for the single functional index model

17-19/12/2022 |

INVITED TALK AT THE 15TH INTERNATIONAL CONFERENCE OF THE ERCIM WG ON COMPUTATIONAL AND METHODOLOGICAL STATISTICS (CMSTATISTICS)

On the complexity index of a functional time series

20-24/06/2022 |

INVITED TALK AT THE INTERNATIONAL SYMPOSIUM OF NONPARAMETRIC STATISTICS, PATHOS, CYPRUS

Evaluating the complexity of a Functional Time Series

18-20/12/2021 |

INVITED TALK AT THE 14TH INTERNATIONAL CONFERENCE OF THE ERCIM WG ON COMPUTATIONAL AND METHODOLOGICAL STATISTICS (CMSTATISTICS)

About the complexity of a Functional Time Series

23/06/2021 |

CONTRIBUTED TALK AT THE INTERNATIONAL WORKSHOP FOR FUNCTIONAL AND OPERATORIAL STATISTICS

Substitution-based structures with absolutely continuous spectrum

29/03/2017 |

INVITED TALK AT OPEN STATISTICAL PHYSICS

Inflation-based sequences with absolutely continuous spectrum

16-24/09/2016 |

POSTER PRESENTATION AT INTERNATIONAL CONFERENCE ON QUASICRYSTALS, KATHMANDU, NEPAL

Diffraction spectrum of a Rudin--Shapiro-like sequence

07/06/2016 |

PLENARY TALK, TRANSVERSAL ASPECTS OF TILINGS AT OLÉRON, FRANCE

ORGANISATION OF SESSIONS IN CONFERENCES

Advances in functional data: Theory and applications, Joint with Prof. Enea Bongiorno 22-25/08/2023 |

ORGANISED SESSION AT THE 25TH INTERNATIONAL CONFERENCES ON COMPUTATIONAL STATISTICS, LONDON

RESEARCH PROJECTS

Member

09/2019-03/2020 |

PROJECT: RAE (RESPONSIVE ALGORITHMIC ENTERPRISE),
ENERGY MANAGEMENT SYSTEM FOR SMES,
FUNDED EXTERNALLY BY AND TECHNOLOGY AND RESEARCH
Principal investigator: Dr. Danica Greetham

Member

08/2018-07/2019 |

PROJECT: DATA AND MEASUREMENT PROGRAMME,
RIGHTS LAB AT THE UNIVERSITY OF NOTTINGHAM, UNITED KINGDOM
Principal investigators: Professor Doreen Boyd, Sir Bernard W. Silverman, Fellow of the Royal Society

AWARDS

- Young scientist award to attend International conference on Quasicrystals 2016
- Partial funding to attend thematic month at Oléron, France 2016
- Fully funded studentship with stipend 2014-2017
- Liverpool affinity award 2013-2014
- Faculty of physical sciences and engineering postgraduate scholarship 2013-2014
- Departmental scholarship for M.Sc. students 2013-2014
- University of Liverpool regional award 2010-2013

ADMINISTRATIVE ACTIVITIES AND MENTORING

Mentored German exchange student Marcus Voss on energy disaggregation project

2019 |

KNOWLEDGE MEDIA INSTITUTE, THE OPEN UNIVERSITY

- I co-supervised Marcus with Dr. Danica Greetham on energy disaggregation. During his time here, he implemented deep learning algorithms on energy disaggregation. His results formed part of our report back to the industry partner.

Mentored French exchange student Nicolas Laube on aperiodic tiling

2017 |

SCHOOL OF MATHEMATICS AND STATISTICS, THE OPEN UNIVERSITY

- Organized meeting and planned goals to be achieved during his stay. Discussed with him on his weekly reading. Assessed his progress made each week. He produced a report and Python code that generated aperiodic tilings.

Founder and coordinator of postgraduate students seminar

2014-2017 |

SCHOOL OF MATHEMATICS AND STATISTICS, THE OPEN UNIVERSITY

Student chair of modules and teaching review committee

2010-2013 |

THE UNIVERSITY OF LIVERPOOL

- Led a team of seven to process students reviews of all the courses the department offered. Wrote summary reports and delivered them to lecturers. Presented findings to the student-staff committee and lead to better teaching qualities.

TEACHING EXPERIENCE

Lecturer

2022-2023 |

UNIVERSITA DEL PIEMONTE ORIENTALE

- Statistics for finance (Master level) (60 hours).

Teaching assistant to Prof. Aldo Goia

2021-2022 |

UNIVERSITA DEL PIEMONTE ORIENTALE

- Statistics for finance (Master level) (60 hours).

Teaching assistant to Prof. Uwe Grimm

2014-2015 |

LONDON TAUGHT COURSE CENTRE'S PHD COURSE

- Aperiodic order: Marking assignments (10 hours) and assisting in tutorials (2.5 hours).

Teaching assistant to the following undergraduate/postgraduate courses

2013-2014 |

THE UNIVERSITY OF LIVERPOOL

- Calculus I (first year): Teaching in tutorials (10 hours) and marking assignments (25 hours)
- Calculus II (first year): Teaching in tutorials (10 hours) and marking assignments (20 hours)
- Introduction to Statistics (first year): Teaching in tutorials (5 hours)
- Complex functions (Second year): Teaching in tutorials (10 hours) and marking assignments (20 hours)
- Geometry of curves (third year): Teaching in tutorials (5 hours) and marking assignments (15 hours)
- Group theory (third year): Teaching in tutorials (5 hours) and marking assignments (10 hours)
- Analysis and number theory (third year): Teaching in tutorials (10 hours)

COURSE MATERIAL DESIGN ASSISTANCE

Professor Uwe Grimm's course: Aperiodic order

2014-2015 |

LONDON TAUGHT COURSE CENTRE

- I proof-read his online slides and homework. Further, I proof-read and gave suggestion to a condensed version of his course material which later became a chapter in the book *Dynamical and Complex Systems*, *LTCC Advanced Mathematics Series volume 5*.

Online course material (textbooks)

2014-2015 |

SCHOOL OF MATHEMATICS AND STATISTICS, THE OPEN UNIVERSITY

- I proof-read, went through textbooks material and provided feedback for M337 Complex analysis and MST124 Essential Mathematics I. The latest version of the textbook materials are now in print.

JOURNALS AND GRANTS REVIEW EXPERIENCE

- UK research and innovation future leaders fellowships (2023)

PROFESSIONAL MEMBERSHIP

- Member of Gruppo Nazionale per l'Analisi Matematica, la Probabilità e le loro Applicazioni, InDAM

COMPUTER SKILLS

- R (with experience of writing CRAN approved package)
- Python (Implemented Factorial Hidden Markov Models and Combinatorial optimisation on energy data set)
- Matlab (Implemented state of the art classification algorithms)
- \LaTeX (Articles and report writing)

LANGUAGE SKILLS

- Mother tongue: Cantonese
- Other languages: English (C1), Italian (basic written).