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

BOOTSTRAPPING MULTIPLE SYSTEMS ESTIMATES TO ACCOUNT FOR MODEL SELECTION ⬀
Bernard W. Silverman, Lax Chan, Kyle Vincent
Statistics and Computing (2023)

DETECTING THE COMPLEXITY OF A FUNCTIONAL TIME SERIES ⬀
Enea G. Bongiorno, Lax Chan, Aldo Goia
Journal of Nonparametric Statistics (2023)

A LINK FUNCTION SPECIFICATION TEST IN THE SINGLE FUNCTIONAL INDEX MODEL ⬀
Lax Chan, Laurent Delsol, Aldo Goia
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
Indagationaes 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 Chan[1], 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

CONFERENCE PROCEEDINGS, ABSTRACT IN BOOKS AND CONFERENCES, AND THESIS

NON-PARAMETRIC DIMENSIONALITY DETECTION FOR FUNCTIONAL DATA ⬀
Enea G. Bongiorno, Lax Chan, Aldo Goia
In Book of Abstracts of the 25th International Conference on Computational Statistics (COMPSTAT) (2023)

ON SPECIFYING A LINK FUNCTION OF A SINGLE FUNCTIONAL INDEX MODEL ⬀
Lax Chan
In Book of Abstracts of the 25th International Conference on Computational Statistics (COMPSTAT) (2023)

GOODNESS-OF-FIT TEST FOR THE SINGLE FUNCTIONAL INDEX MODEL ⬀
Lax Chan, Aldo Goia
Book of Short Papers - CLADAG 2023 [in press]

A SPECIFICATION TEST FOR THE SINGLE FUNCTIONAL INDEX MODEL. ⬀
Lax Chan

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

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

TECHNICAL REPORT

ON BAYESIAN INFERENTIAL TASKS WITH INFINITE-STATE JUMP PROCESSES: EFFICIENT DATA AUGMENTATION ⤴

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

R PACKAGES

SPARSEMSE 2.0.1 ⤴

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

INVITED TALKS AND SEMINARS

A link function specification test in semi-parametric regression   07/09/2023 |
DATA SCIENCE AND COMPUTATIONAL STATISTICS SEMINAR, UNIVERSITY OF BIRMINGHAM, UK

On specifying a link function of a single functional index model   22-25/08/2023 |
INVITED TALK AT THE 25TH INTERNATIONAL CONFERENCE ON COMPUTATIONAL STATISTICS, LONDON

Goodness-of-fit test for the Single Functional Index Model   04/07/2023 |
SEMINARI DI MATEMATICA E STATISTICA, UNIVERSITÀ DEL PIEMONTE ORIENTALE, ITALY

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), LONDON

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), ONLINE

Substitution-based structures with absolutely continuous spectrum   29/03/2017 |
INVITED TALK AT OPEN STATISTICAL PHYSICS, MILTON KEYNES, UK

Diffraction spectrum of a Rudin--Shapiro-like sequence   07/06/2016 |
PLENARY TALK, TRANSVERSAL ASPECTS OF TILINGS AT OLÉRON, FRANCE

CONTRIBUTED TALKS AND POSTER PRESENTATIONS

Goodness-of-fit test for the Single Functional Index Model   11-13/09/2023 |

Contributed talk at the 14th Scientific meeting Classification and Data Analysis group

About the complexity of a Functional Time Series 23/06/2021 |
Contributed talk at the International Workshop for Functional and Operatorial Statistics, online

Inflation-based sequences with absolutely continuous spectrum 16-24/09/2016 |
Poster presentation at International Conference on Quasicrystals, Kathmandu, Nepal

MEMBER OF RESEARCH GRANTS AND AWARDS

COST Action CA21163 "HiTEc", "Text, functional and other high-dimensional data in econometrics: New models,methods,applications" 2022-2026 |
Grant funded by European Union

FSE REACT-EU, PON Ricerca e Innovazione 2014-2020 2022-2025 |
Grant funded by European Union

- 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

SUPERVISION

Bachelor and master theses co-supervisors 2020-present |
Universita del Piemonte Orientale, Italy

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.

TEACHING EXPERIENCE

Lecturer 2020-present |
Universita del Piemonte Orientale

- Statistics for finance (Master level) (60 hours)
- Laboratorio di Statistica(Statistics laboratory) (Bachelor level) (40 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.

GRANTS REVIEW EXPERIENCE

- UK research and innovation future leaders fellowships (2023)

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

DEPARTMENTAL ADMINISTRATION

Committee for evaluation of applications of contracted professors or teachers   2022-present |
DiSEI, UNIVERSITÀ DEL PIEMONTE ORIENTALE "A. AVOGADRO"

Committee for evaluation of English capability for entry to master level courses   2022-present |
DiSEI, UNIVERSITÀ DEL PIEMONTE ORIENTALE "A. AVOGADRO"

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.

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).