Xihang Chen

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Personal Profile

I am a research assistant in Health Data Science at NDORMS, University of Oxford, where my main responsibility involves programming in R to answer healthcare research questions. Before that I have completed Integrated Master's in Mathematics (MMATH) from University of Oxford. I am looking to apply my mathematics and programming background to research opportunities.

Education

Master of Mathematics, University of Oxford - Distinction *October 2021 - June 2022*

Part C: *Distinction* 76% - Rank: 21/79

Dissertation: Chabauty Techniques in Number Theory. Supervisor: Professor Victor Flynn. 70%

- Studied group structure of curves of genus 1 and 2 including different methods of rank computations.
- Investigated Chabauty Techniques for curves of genus 1 and 2, refined the idea of Elliptic Curve Chabauty.
- Studied and applied covering technique to a curve of genus 2.

Bachelor of Mathematics, University of Oxford - First Class *October 2018 - June 2021*

Part B: *First Class* 77% - Rank: 13/128

Part A: *Honours Pass* 77% - Rank: 12/132

Preliminary: *Pass* 63%

Project Undertaken: Computational Mathematics (MATLAB) Projects. 80%

- MATLAB Project 1: Solving nonlinear equations.
- MATLAB Project 2: Solving an initial value problem.

A Levels, Maiden Erlegh School *September 2016 - June 2018*

A Levels: Mathematics - A*, Further Mathematics - A*, Chemistry - A, Chinese - A.

Experience

Research Assistant in Health Data Science, University of Oxford [full time] *October 2022 until now*

Design and programme analytical pipelines in R for the analyses using routinely collected data in OMOP (Observational Medical Outcomes Partnership) Common Data Model.

- EHDEN (European Health and Data Evidence Network) funded Parkinson's Study:
  Github repository: https://github.com/oxford-pharmacoepi/ParkinsonsIncidencePrevalence
  Github repository: https://github.com/oxford-pharmacoepi/ParkinsonsPSSA
- UCB funded Refracture Study:
  Github repository: https://github.com/oxford-pharmacoepi/RefractureStudy
- Author and maintainer of the CRAN package CohortSymmetry.
  Github development repository: https://github.com/oxford-pharmacoepi/CohortSymmetry

Teaching

- Teaching Assistant at Oxford Summer School 2024: Real World Evidence using the OMOP Common Data Model *June 2024*
- Tutor of Mathematics at VarsityTutors
  Tutored A Level (UK) and College (US) Maths including Calculus and Linear Algebra.
  Feb 2024 - June 2024

Presentations and Talks

- **Oral presentation of the thesis (2022)**: My viva on *Chabauty Techniques in Number Theory.*
- **International Society for Pharmacoepidemiology (ICPE) Conference (2023)**: Spotlight Poster: *Incidence and prevalence of Parkinson's disease and utilisation of antiparkinson treatments: a population-based cohort study.*
- **World Congress on Osteoporosis, Osteoarthritis and Musculoskeletal Diseases (WCO IOF-ESCEO) Conference (2024)**: Poster: *Subsequent Fractures in Postmenopausal Women with Fragility Fractures: Incidence and Patient Characteristics from Six European Countries.*
- **OHDSI Europe Symposium (2024)**: Software Demo: *CohortSymmetry: an R package for Prescription Sequence Symmetry Analysis using OMOP CDM.*
- **International Society for Pharmacoepidemiology (ICPE) Conference (Upcoming, 2024)**: Oral presentation: *Using Prescription Symmetry Sequence Analysis in the context of Antiparkinsonian Treatments in the United Kingdom.*

Publications

- **Change in incidence and prevalence of parkinsonism: A population-based cohort study in the United Kingdom from 2007 to 2021**: (In preparation.)

Skills Summary

- **Typesetting**: Advanced in LaTeX.
- **Programming**: Advanced in R (R packages, Quarto presentation, R shiny). Proficient in Python and MATLAB. Competent in SQL.
- **Other skills**: Competent in SageMath, Magma and Manim.

Awards and Achievements

- College Book Prizes *St Peter's College, University of Oxford*
- Barron Scholarships *St Peter's College, University of Oxford*
- Collection Prizes (3 times) *St Peter's College, University of Oxford*
- Ballard Cup - Academic Excellence *Maiden Erlegh School*
- 100 in Quantum Theory, Part A *Mathematical Institute, University of Oxford*
- 97 in Galois Theory, Part B *Mathematical Institute, University of Oxford*
- 93 in Linear Algebra, Part A *Mathematical Institute, University of Oxford*
- 93 in Nonlinear Systems, Part B *Mathematical Institute, University of Oxford*