Chi-Kuang Yeh, PhD

Last updated: November 3, 2024

CANSSI Distinguish Postdoctoral Fellow

1216, Burnside Hall, McGill University
805 Sherbrooke Street West, Montreal, QC, Canada. H3A 0B9

✉ Email: chi-kuang.yeh@uwaterloo.ca
🌐 Website: https://chikuang.github.io/
🐙 GitHub: https://github.com/chikuang
𝄞 Google Scholar: Chi-Kuang Yeh
R⁶ ResearchGate: Chi-Kuang Yeh
in LinkedIn: https://www.linkedin.com/in/chikuang/
Citizenship: Canada, Taiwan

Education

2023   Ph.D. in Statistics, University of Waterloo, ON, Canada
        Advisor: Gregory Rice & Joel A. Dubin
        Thesis: *Methods in Functional Data Analysis: Forecast Evaluation, Robust Serial Dependence Measures, and a Spatial Factor Copula Model*

2018   M.Sc in Statistics, University of Victoria, BC, Canada
        Advisor: Julie Zhou
        Thesis: *Optimal Regression Design under Second-order Least Squares Estimator: Theory, Algorithm and Applications*

2016   B.Sc (H.) in Mathematics & Statistics with minor in Computer science, University of Victoria, BC, Canada

Professional Employment

2024 –   CANSSI Distinguish Postdoctoral Fellow, Department of Mathematics and Statistics, McGill University, QC, Canada.
            Mentor: Peijun Sang, Archer Yi Yang, Qihuang Zhang & Celia M.T. Greenwood

2023 – 2024 CANSSI Distinguish Postdoctoral Fellow, Department of Statistics and Actuarial Science, University of Waterloo, ON, Canada.
            Mentor: Peijun Sang, Archer Yi Yang, Qihuang Zhang & Celia M.T. Greenwood

2023 –   Associate Postdoctoral Fellow, Mila – Quebec AI Institute, QC, Canada.
            Host: Archer Yi Yang

2024   Sessional Instructor, University of Waterloo, ON, Canada.

2018 –   Associate Member, Waterloo Health Data Science Lab.

Host: Joel A. Dubin

2019 – 2020 STATISTICAL CONSULTANT, Statistical Consulting and Collaborative Research Unit and the Survey Research Centre, University of Waterloo, ON, Canada.
Director: Martin Lysy

Research areas

• Functional data analysis • Statistical machine learning and high-dimensional inference • Dependence modeling • Optimal design of experiments • Applications in biomedical and industrial data, including neuroscience, drug development and finance.

Publications

* FOR JOINT FIRST AUTHORS; + FOR ALPHABETICAL LISTING;

REFEREED JOURNAL ARTICLES

[1] **Yeh, C.-K.** & Zhou, J. (2021). Properties of optimal regression designs under the second-order least squares estimator. *Statistical Papers*, 62, 75-92. [LINK].

[2] **Yeh, C.-K.**, Rice, G. & Dubin, J.A. (2022). Evaluating real-time probabilistic forecasts with application to National Basketball Association outcome prediction. *The American Statistician*, 76, 214-223. [LINK]

[3] **Yeh, C.-K.**, Rice, G. & Dubin, J.A. (2023). Functional spherical autocorrelation: A robust estimate of the autocorrelation of a functional time series. *Electronic Journal of Statistics*, 17, 650–687. [LINK]

[4] **Yeh, C.-K.** & Sang, P. (2023). Variable selection in multivariate functional linear regression. *Statistics in Bioscience.* [LINK].

MANUSCRIPTS IN REVISION

[1] Liu, S.*, **Yeh, C.-K.***, Zhang, X., Tian, Q. & Li, P. Positive and unlabeled data: model, estimation, inference, and classification. Revision requested by *Journal of American Statistical Association.* [ARXIV]

MANUSCRIPTS IN SUBMISSION

[1] **Yeh, C.-K.** & Zhou, J. CVXSADes: a stochastic algorithm for constructing exact optimal regression designs with single or multiple objectives.

[2] Kim, M., Rice, G., Zhao, Y. & **Yeh, C.-K.** FTSgof: White noise and goodness-of-fit tests for functional time series in R.

Software

Yeh, C.-K., Zhou, J. & Hou-Liu, J.. Rpackage "SLSEdesign". [CRAN] [GITHUB]
Kim, M., **Yeh, C.-K.**, Zhao, Y. & Rice, G.. Rpackage "FTSgof". [CRAN] [GITHUB]
Yeh, C.-K., Tian, Q., Liu, S., Li, P. & Zhang, X. Rpackage "PUEM". Upon Request.
Yeh, C.-K., Dubin, J.A. & Rice, R. Rpackage "evalRTPF". [GITHUB]

Fellowships

2023 – 2025   CANSSI Distinguish Postdoctoral Fellowship, Canadian Statistical Sciences Institute ($ 70,000 CAD/year)

Awards & Honours

2021 – 2023   Queen Elizabeth II Graduate Scholarship, Government of Ontario ($ 30,000 CAD)
2020 – 2023   President's Graduate Scholarship, University of Waterloo (UWaterloo) ($ 45,000 CAD)
2022   Statistics and Actuarial Science Best Research Presentation Prize, SAS Research Presentation day, UWaterloo ($ 500 CAD)
2020 – 2021   Ontario Graduate Scholarship, Government of Ontario ($ 15,000 CAD)
2018 – 2021   Mathematics Domestic Doctoral Award, UWaterloo ($ 20,000 CAD)
2018 – 2020   Mathematics Domestic Graduate Scholarship, UWaterloo ($ 12,000 CAD)
2019 – 2022   Statistics & Actuarial Science Chair's Award, UWaterloo ($ 5,000 CAD)
2019   University of Waterloo Graduate Scholarship, UWaterloo ($ 1,000 CAD)
2018   Student Travel Award, Statistical Society of Canada ($ 150 CAD)
2018   Graduate Student Conference Travel Grant, UVic ($ 500 CAD)
2018   CUPE Conference Travel Award, UVic ($ 250 CAD)
2017 – 2018   Faculty of Graduate Studies Scholarship, UVic ($ 6,000 CAD)
2017   Florence and Wallace Wilkinson Memorial Award, UVic ($ 3,370 CAD)
2016   University Scholarship, UVic ($ 4,000 CAD)
2010   Summit Entrance Scholarship, Simon Fraser University ($ 3,500 CAD)

Presentations

INVITED

2024   **Evaluating real-time probabilistic forecasts for sports games outcome prediction**, June 8, the Sixth ICSA-Canada Chapter Symposium, Crowne Plaza Niagara Falls-Fallsview, Niagara Falls, ON, Canada.

Mass spectrometry data: a spatial functional data approach, June 5, Statistical Society of Canada annual meeting, Memorial University of Newfoundland, St. John's, NL, Canada.

Robust serial dependence measures of a functional time series, February 23, UVic–PIMS data science seminar series, University of Victoria (UVic) with Online Broadcast, Victoria, BC, Canada.

2023   **Functional spherical autocorrelation: robust autocorrelation estimation of a functional time series**, July 17th, 64th ISI World Statistics Congress, Ottawa, ON, Canada.

Functional spherical autocorrelation: a robust estimate of the autocorrelation of a functional time series, March 8, Institution of Statistics Seminar, Academia Sinica, Taipei, Taiwan.

CONTRIBUTED

2024   **Positive and unlabeled data: model, estimation, inference, and classification**, September 10, CANSSI Quebec's Postdoc Day 2024, Concordia University, QC, Canada.

2023   **Functional spherical autocorrelation: robust autocorrelation estimation of a functional time series**, August 7, Joint Statistical Meetings, Toronto, ON, Canada.

Functional spherical autocorrelation: robust autocorrelation estimation of a functional time series, May 29, Statistical Society of Canada annual meeting, Carleton University, Ottawa, ON, Canada.

2022   **Functional spherical autocorrelation: a robust estimate of the autocorrelation of a functional time series**, October 15, Third Waterloo Student Conference in Statistics, Actuarial Science and Finance, ON, University of Waterloo (UWaterloo), Canada.

Projection based model validation and identification methods for functional time series, June 2, Statistical Society of Canada Annual Meeting, Virtual.

Projection based model validation and identification methods for functional time series, March 11, Statistics and Actuarial Science Virtual Research Presentation Day, UWaterloo, ON, Canada.

2021   **Evaluating real-time updated probabilistic forecasts with application to National Basketball Association outcome prediction**, June 10, Statistical Society of Canada Annual Meeting, Virtual.

Evaluating real-time updated probabilistic forecasts with application to National Basketball Association outcome prediction (*Best presentation award*), February 5th, Statistics and Actuarial Science Virtual Research Presentation Day , UWaterloo, ON, Canada.

Evaluating the performance of continuously updated probabilistic forecasts with application to National Basketball Association, January 20, Student Seminar Series, Department of Statistics and Actuarial Science, UWaterloo, ON, Canada.

2020   **Evaluating Probabilistic Forecasts with an Application in National Basketball Association**, Health Data Science Lab, UWaterloo, ON, Canada.

2019   **Properties of Optimal Regression Designs under Second-Order Least Squares Estimator**, Waterloo Student Conference in Statistics, Actuarial Science and Finance, UWaterloo, ON, Canada.

Current and past research conducted on freely available multi-center (eICU) and single-center (MIMIC's) databases for critical care research, Health Data Science Lab, UWaterloo, ON, Canada.

2018   **Properties of optimal regression designs under second-order least squares estimator (*SSC Student travel award*)**, Sixth Canadian Statistics Student Conference, McGill University, QC, Canada.

Optimal regression designs under the second-order least squares estimator, Joint Statistical Meetings, Vancouver downtown, BC, Canada.

2017   **On particle swarm optimization algorithm to solve statistical problems**, Department of Mathematics and Statistics, UVic, BC, Canada.

Teaching Experience

COURSE CODEVELOPER - UNIVERSITY OF VICTORIA

2018 Spring   **Data Science**

5

INSTRUCTOR - UNIVERSITY OF WATERLOO

2024 winter **Stat 230 Probability**.

GUEST LECTURER - UNIVERSITY OF VICTORIA

2017 Fall *"Introduction to R Markdown and LATEX"* in Stat 353 Applied Linear Regression, Host: Laura L.E. Cowen.

TUTORIAL INSTRUCTOR

University of Waterloo

Statistics (2019 Spring, 2019 Winter).

University of Victoria

Data Science (2018 Spring), **Calculus I – Pathway/ESL** (2017 Fall).

TEACHING ASSISTANT

University of Waterloo

Applied Linear Models (2022 Fall, 2020 Fall, 2020 Spring), **Sampling Theory and Practice** (2022 Winter), **Applied Probability** (2021 Fall, 2021 Spring) **Forecasting** (2021 Winter, 2021 Fall, 2019 Spring), **Experimental Design** (2018 Fall), **Statistics** (2018 Fall, 2019 Winter, 2019 Spring), **Theoretical Time Series** (2021 Winter), **Mathematical Statistics** (2019 Winter).

University of Victoria

Statistics for Life Sciences I (2018 Summer, 2014 Fall), **Data Science** (2018 Spring), **Finite Mathematics** (2018 Spring), Calculus 1 – Pathway (2017 Fall, 2015 Spring), **Calculus for Social and BIological Science** (2017 Spring, 2015 Fall), **Introductory to Probability and Statistics I** (2016 Fall), **Calculus II** (2015 Fall), **Logic and Foundation** (2014 Fall).

OTHER - UNIVERSITY OF VICTORIA

2017 **Teaching Assistant Conference Certificate**, Learning and Teaching Centre (LTC), UVic

2017 **Teaching Assistant ProD Certificate**, LTC, UVic

2017 **Teaching Fundamental Certificate**, LTC, UVic.

LANGARA COLLEGE

2012 - 2013 **Math & Stats Activity Centre (MSAC)**, Math tutor, Langara College, Vancouver, BC, Canada.

Mentoring

2023–2024 **Tatiana Krikella**, PhD Candidate in Statistics (Biostatistics), UWaterloo, Canada. Next Position: CANSSI distinguish postdoctoral fellow starting 2024 October. [interview]

2023– **Mengqi Xu**, PhD Student in Statistics (Biostatistics), UWaterloo, Canada.

Service and Outreach

ORGANIZING AND VOLUNTEER SERVICE

2023–2024 **Transfer Learning reading group**, Co-organizer, UWaterloo, Canada.

2024 **The Sixth ICSA-Canada Chapter Symposium**, Volunteer, Crowne Plaza Niagara Falls-Fallsview, Niagara Falls, ON, Canada.

The Statistics Society of Canada Annual Meeting, Student poster judge, St. John's, Newfoundland and Labrador, Canada.

The Twelfth Annual Canadian Statistics Student Conference, Judge, St. John's, NL, Canada.

2023 **Fourth Waterloo Student Conference in Statistics, Actuarial Science and Finance**, Judge, UWaterloo, ON, Canada.

2020 - 2023 **Student Seminar Series**, Organizer, Departmental Statistics and Actuarial Science, UWaterloo, ON, Canada.

2022 **Third Waterloo Student Conference in Statistics, Actuarial Science and Finance**, Organizing Committee and Session chair, UWaterloo, ON, Canada.

2022 **ASA Datafest**, Mentor, American Statistical Association, UWaterloo, ON, Canada.

2020 **Second Waterloo Student Conference in Statistics, Actuarial Science and Finance**, Organizing Committee and session chair, UWaterloo, ON, Canada.

2019 **First Waterloo Student Conference in Statistics, Actuarial Science and Finance**, Organizing Committee and session chair, UWaterloo, ON, Canada.

2018 **ICSA Booth at Joint Statistical Meeting**, Volunteer, Vancouver, BC, Canada.

JOURNAL REFEREE

2024 The American Statistician, Statistical Papers

2023 Computational Statistics & Data Analysis, The American Statistician

2022 TEST

Membership

1. Statistical Society of Canada (2018 – Now)
2. International Chinese Statistical Association (2018 – Now)
3. American Statistical Association (2018–Now)
4. Western North American Region of the International Biometric Society (2018–Now) (2018–Now)
5. Eastern North American Region of the International Biometric Society (2019–Now)
6. International Statistical Institute

Media Coverage

2023   CANSSI Distinguish Postdoctoral announcement

Reference

Joel A. Dubin
University of Waterloo
Mathematics 3 – 4218
200 University Avenue West
Waterloo, ON, Canada N2L 0G2
jdubin@uwaterloo.ca

Gregory Rice
University of Waterloo
Mathematics 3 – 4117
200 University Avenue West
Waterloo, ON, Canada N2L 0G2
grice@uwaterloo.ca

Peijun Sang
University of Waterloo
Mathematics 3 – 4004
200 University Avenue West
Waterloo, ON, Canada N2L 0G2
peijun.sang@uwaterloo.ca

Qihuang Zhang
McGill University

2001 McGill College, Suite 1212
Montreal, QC, Canada H3A 1G1
jqihuang.zhang@mcgill.ca

Julie Zhou
University of Victoria
David Turpin Building – A439
3800 Finnerty Road
Victoria, BC, Canada V8P 5C2
jzhou@uvic.ca

Erik Hintz (Teaching)
Assistant Teaching Professor
University of Waterloo
Mathematics 3 – 4004
200 University Avenue West
Waterloo, ON, Canada N2L 0G2
erik.hintz@uwaterloo.ca