Yiming (Emmett) Peng

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Education

- **University of Toronto, Dalla Lana School of Public Health** *Sept 2024 – Aug 2026 (Expected)*
  Master of Science in Biostatistics – Thesis Option; ***GPA: 4.00/4.00***
  Thesis: Bayesian Latent Class Models for Estimating the Causal Effects on Multiple Cognitive Trajectories in Aging Populations
  ◦ Supervised by Dr. Kuan Liu and Dr. Zihang Lu

- **Beijing Institute of Technology, Zhuhai** *Sept 2020 – Jun 2024*
  Bachelor of Science in Applied Statistics; ***GPA: 3.96/4.00 (WES)***
  Thesis: Deep Learning and Stochastic Modeling of Human Activity Patterns through Smartwatch Sensors for Health Interventions (*Honored as Outstanding Thesis*)
  ◦ Supervised by Dr. Han C.W. Hsiao

Publications and Presentations

C=Conference, S=In Submission, W=Working Papers

[C] **Yiming (Emmett) Peng**, Victoria Truong, Aoqi Xie, Yu Shi, Pingzhao Hu (2025) **Enhancing Breast Cancer Treatment Response Prediction with Single-Cell RNA Sequencing and Large Language Models**. *2025 Statistical Society of Canada (SSC) Annual Meeting*, p58. May 25 - 28, Saskatoon, Saskatchewan, Canada. **[Slides]** **[Poster]**

[C] Jiahui Zhang, Yu Shi, Aoqi Xie, **Yiming (Emmett) Peng**, Pingzhao Hu (2025) **Uncertainty-Calibrated Interpretable Tabular Transformer Model for Atrial Fibrillation Prediction with Competing Risk**. *2025 Statistical Society of Canada (SSC) Annual Meeting*, p42. May 25 - 28, Saskatoon, Saskatchewan, Canada. **[Poster]**

[S] **Yiming (Emmett) Peng***, Victoria Truong*, Aoqi Xie, Yu Shi, Pingzhao Hu (2025) **PRECISE: A Framework for the Prediction of REsponse using Cell-type Inference and Single-cell Embedding in Breast Cancer Patients Receiving Anti–PD-1 Treatment**. # *Submitted to PLOS Genetics* **[Code]**

[W] **Yiming (Emmett) Peng**, Zihang Lu, Kuan Liu (2025) **Bayesian Latent Class Causal Inference with Nonparametric Covariate Modeling for Baseline Cognitive Outcomes in Aging Populations**.
An earlier version of this work was presented at the Data Science Institute Causal Inference Workshop, Toronto, Ontario, Canada, October 22, 2025. **[Poster]**

[W] Daniela Denier, **Yiming (Emmett) Peng**, Kuan Liu, Amanda Ricciuto (2025) **Longitudinal Analysis of Repeated Serum Markers to Identify Clinically Relevant Patient Subgroups in Pediatric Primary Sclerosing Cholangitis: Data from the Pediatric PSC Consortium**.

[W] Yuxin Jing, **Yiming (Emmett) Peng**, Ashley Danguecan, Andrea Knight (2025) **Examining the Relationship Between Socioeconomic Factors and Mental Health in Childhood-Onset Systemic Lupus Erythematosus Using a Multilevel Analysis**.

[W] Jiahui Zhang, Yu Shi, Aoqi Xie, **Yiming (Emmett) Peng**, Pingzhao Hu (2025) **Predicting New-Onset Atrial Fibrillation with Competing Risks Using an Uncertainty-Calibrated Interpretable Tabular Transformer: Evidence from the Cardiovascular Imaging Registry of Calgary (CIROC)**.

Professional Experience

- **Knight Lab, The Hospital for Sick Children** *Jun 2025 - Present*
  Clinical Research Project Assistant, supervised by ***Dr. Andrea Knight*** Toronto, Canada
  ◦ Implement Bayesian statistical methods in R to investigate socioeconomic and mental health outcomes in childhood-onset systemic lupus erythematosus (cSLE).
  ◦ Collaborate on designing the research framework and lead statistical analyses, including data pre-processing, imputation, and modeling.
  ◦ Provide statistical consulting for interdisciplinary teams and contribute to manuscript drafting for publication.

- **The Hospital for Sick Children** *Jun 2025 - Present*
  Research Volunteer, supervised by ***Dr. Amanda Ricciuto and Dr. Anne Griffiths*** Toronto, Canada
  ◦ Implement latent class mixed models in R to analyze longitudinal serum biomarker trajectories in primary sclerosing cholangitis (PSC) patients.
  ◦ Implement survival analysis incorporating latent class membership, showing its statistical and clinical significance in predicting transplant outcomes alongside other covariates.
  ◦ Collaborate with clinicians and biostatisticians to interpret findings and contribute to manuscript preparation.

- **Hu Lab, Dalla Lana School of Public Health, University of Toronto** *Oct 2024 - Jun 2025*
  *Data Science Research Student, supervised by **Dr. Pingzhao Hu*** Toronto, Canada
  - Developed an integrated multi-stage pipeline in Python combining single-cell RNA-seq data with embeddings from large language models (LLMs) and foundation models to identify cell type-specific biomarkers for breast cancer treatment response.
  - Implemented supervised classification using cell-type–specific biomarkers and cluster-specific bulk gene-expression profiles to predict treatment response, achieving improved predictive performance over baseline methods.
  - Drafted manuscripts and presentations for conferences and peer-reviewed journals.
- **The University of Hong Kong** *Jan 2025 - Apr 2025*
  *Research Volunteer, supervised by **Dr. Liwu Zheng***
  - Collaborate with clinicians on biostatistical research projects.
  - Provide statistical consulting for clinical studies.

Honors and Awards

- **Winner – Case Studies in Data Analysis Competition, SSC 2025** *May 2025*
  Statistical Society of Canada (SSC)
  - Ranked 1st out of 16 teams in the 2025 SSC Case Study Competition (Case Study #1): Prediction of New Onset Atrial Fibrillation Using Routinely Reported 12-Lead ECG Variables and Electronic Health Data.
  - Poster Title: Uncertainty-Calibrated Interpretable Tabular Transformer Model for Atrial Fibrillation Prediction with Competing Risk.
  - Team: Jiahui Zhang, Yu Shi, Aoqi Xie, and Yiming (Emmett) Peng. Mentor: Dr. Pingzhao Hu. Award valued at $2,500 CAD per team.
- **CSSC 2025 Travel Award** *May 2025*
  Canadian Statistics Student Conference (CSSC), sponsored by CANSSI
  - Awarded to select student presenters at CSSC 2025 for academic excellence and research contributions. Sponsored by CANSSI and valued at up to $150 CAD for travel support.
- **BITZH President's Scholarship** *May 2023*
  Beijing Institute of Technology, Zhuhai
  - Awarded to 112 students in the Beijing Institute of Technology, Zhuhai for outstanding performance across all areas of academic and extracurricular achievement. Valued at $2,000 CAD.
- **College Dean's Honor Scholarship** *2021 - 2024*
  Beijing Institute of Technology, Zhuhai
  - 3x recipient (2021-24). Awarded to the top 10% of students in the department. Valued at $1,000, $2,000, and $4,000 CAD, respectively.
- **BITZH Freshman Entrance Scholarship and Continuing Scholarship** *2020 - 2024*
  Beijing Institute of Technology, Zhuhai
  - 4x recipient (2020-24). Awarded to the top 10% of students in the program based on outstanding performance in the National College Entrance Examination and continued academic excellence. Valued at $4,800 CAD per year.
- **BITZH Outstanding Student Scholarship** *2020 - 2024*
  Beijing Institute of Technology, Zhuhai
  - 8x recipient (each semester from 2020 to 2024). Awarded to the top 10% of students in each major.

Skills

- **Programming Languages:** R, Python, MATLAB, C++
- **Tools & Technologies:** Git, LaTeX, RMarkdown, Jupyter Notebook, Eviews, Maple, Mathematica, SQL, Excel
- **Statistics Concepts:** Causal Inference, Latent Class Analysis, Survival Analysis, Longitudinal Data
- **Machine Learning Models:** Transformers, RNNs, Regression (GLM, Penalization), CNNs, Neural Networks
- **Languages:** Native proficiency in Chinese; professional working proficiency in English

Community Involvement and Leadership Experience

- **Biostatistics Union of Graduate Students (BUGS)** *Sep 2024 - Present*
  PHSA MSc Representative and Seminar Committee member [🌐]
- **Health Data Working Group** *Sep 2024 - Present*
  Student Member [🌐]
- **Public Health Students'Association, University of Toronto** *Sep 2025 - Present*
  Biostatistics MSc Representative
- **Student Union, College of Global Talent, Beijing Institute of Technology, Zhuhai** *Sep 2020 – Jun 2022*
  Officer