Chengxin Gong

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EDUCATION

- **Peking University** — Beijing, China
  Undergraduate, School of Mathematical Sciences — Sept. 2019 - present

PROJECTS

- 1. Model Selection for Mixture of Gaussian Process Functional Regressions (mix-GPFR).
  Chengxin Gong and Zhongyi Wang.
  Team Project for *Statistical Models and Computing Methods*, 2021

- 2. An Analysis of Representation Learning.
  Rui Ai, Hongrui Chen, **Chengxin Gong** and Kaicheng Shao.
  Team Project for *Statistical Learning*, 2021

- 3. A Comparative Study on Electrophysiological Models of Single Neurons.
  Chengxin Gong, Zhongyi Wang, Shengyang Wang and Baichuan Hu.
  Team Project for *Mathematical Models*, 2021

- 4. Score Matching Variational Autoencoder.
  Yiyang Fan, **Chengxin Gong**, Guo Wei and Zhongyi Wang.
  Team Project for *Bayesian Theory and Computation*, 2022.

- 5. Dynamical Compensation, Structural Unidentifiability and Application on the Calcium Homeostasis System.
  Zhongyi Wang, **Chengxin Gong**, Haoyu Wang and Haoda Wang.
  Team Project for *Mathematical Modeling in the Life Sciences*, 2022.

RESEARCH INTERESTS

- **Computational Statistics, Bayesian Statistics, High-Dimensional Statistics**: Fit an unknown distribution and then sample from it, conduct Bayesian inference and derive some useful generalization bounds.
- **Machine Learning, Artifical Intelligence**: Develop new machine learning methods or apply old ones to analyse the inner structure and futural tendency of the data and help humans to make more scientific decisions.

RESEARCH EXPERIENCES

- **Automated Model Selection for A Two-Layer Mixture Model of Gaussian Process Functional Regressions (TMGPFR)**: Currently, I am conducting research supervised by Dr. Jinwen Ma of Peking University, which mainly focuses on improving a two-layer mixture model of GPFR for unsupervised learning, high-dimensional statistics and pattern recognition, designing the corresponding algorithm(s) or penalty function(s) for automated model selection and applying our model to some realistic problems, such as clustering analysis and data prediction. We hope the model with the algorithm can fit and cluster the unlabelled time series simultaneously, detect the patterns and predict the possible events for a brand new data set with massive missing sample points.

HONORS AND REWARDS

- **Award for Academic Excellents**, 2022
- **The Third Prize of Peking University Scholarship**, 2022
- **Merit Student**, 2021
- **Panasonic Scholarship**, 2021
- **The Third Prize of Peking University Challenge Cup**, 2021
- **Award for Academic Excellents**, 2020
- **The Third Prize of Peking University Scholarship**, 2020

- **The First Prize in the 12th Mathematics Competition of Chinese College Students**, 2020

- **The Second Prize in the 37th Physics Competition of Chinese College Students**, 2020

SKILLS

- **Programming Languages**: Python, Matlab, C/C++

- **Languages**: Chinese, English

- **Social Positions**:
  The 13th president of PKU Association of Railway Culture Enthusiasts (July 2021 - June 2022)
  The 14th permanent director of PKU Association of Railway Culture Enthusiasts (July 2022 - present)