Qilong Pan

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Education

2021 – Now	**King Abdullah University of Science and Technology (KAUST)**, Saudi Arabia
	M.S. Statistics, GPA: 3.7/4
	Research 1: (In progress) Scalable and efficient random field generation using Generative Adversarial Networks
	Research 2: (In progress) Fast sampling of the score-based generative model with pre-conditions
2017 – 2021	**Wuhan University of Technology**, Wuhan, Hubei, China
	B.S. Statistics, GPA: 92.3/100 , Advisor: *Dr. Yufeng Gui & Dr. Xinping Xiao*
	Research 1: Grey Model extension on compositional data using Aitchison geometry
	Research 2: Counterfactual inference framework for the Recommendation system
2019 – 2021	**Huazhong University of Science and Technology**, Wuhan, Hubei, China
	B.A. English, GPA: 84.7/100
	Favorite writer: Mark Twain (U.S.)
	Favorite novel: The woman on the roof, Lasse Summanen (Sweden)
Courses	Stochastic Gradient Descent; Mathematical Analysis; Advanced Linear Algebra; Stochastic process; probability and statistics; Ordinary Differential Equations; etc

Publications

May 2022	(arXiv) **Q. Pan**, "Visually Evaluating Generative Adversarial Networks Using Itself under Time Series Generation Task". https://arxiv.org/abs/2208.02649 (code: https://github.com/jack-pan-ai/GaussianGANs)
Jan 2021	(arXiv) **Q. Pan**, J. Yin, X. Xiao*, "Novel Compositional Data's Grey Model for Structurally Forecasting Arctic Crude Oil Import" http://arxiv.org/abs/2011.01501.
Nov 2020	Y. Zhao, Z. Zhou*, **Q. Pan**, T. Zhou, "G/M/N Queuing Model Based Research on the Parking Spaces for Primary and Secondary School", Discrete Dynamics in Nature and Society, Accepted, Nov.,2020.

Selected research

Aug 2022	**(In progress) Scalable GANs in Gaussian random field generation**

- Circumvented the notorious statistical parameter estimation for random field generation;
- Adopted conditioned generation to the scalable generation of random field;
- Code repository, https://github.com/jack-pan-ai/temspGANs

Aug 2022   **(In progress) Fast sampling for Denoising diffusion generative models**
- Used the Pre-Conditioned Metropolis Adjusted Langevin Algorithm (PCMALA) to speed up the Langevin sampling;

May 2022   **Visually Evaluating GANs Using Itself** (https://arxiv.org/abs/2208.02649)
- Used GANs to approximate the transformation function in the Kolmogorov–Smirnov test under multivariate case;
- Constructed a statistic using chi-square distribution to evaluate the goodness of the transformation function;
- Code repository, https://github.com/jack-pan-ai/GaussianGANs

Jan 2021   **Compositional data analysis in Grey model** (http://arxiv.org/abs/2011.01501)
- Deduced the form of GM(1,1) in Simplex Space via Aitchison geometry to achieve the prediction of compositional data;
- Proved the mathematical equivalence of parameter estimation in GM(1,1) of Simplex space with that of Euclidean Space (least square method was applied).

May 2021   **Unbiased Estimator using Causality in recommendation system** (Undergraduate dissertation)
- Constructed the unbiased estimator using propensity scores and measurement error model;
- Adopted clipping method to reduce the variance estimator at the expense of a certain unbiased properties.

Selected Competitions

Oct 2020   **China Undergraduate Mathematical Contest in Modeling** (2nd National-level Award Top 3.1%)
- **Purpose**: drivers' decision and queue rule.
- Parametric model: established generalized linear model to quantify the uncertainty of level-up bonus via factors like current flights numbers and past payment amount;
- Nonparametric model: designed a rectangular detection algorithm to obtain the overall distribution of random variables from the large data of cab GPS routes and real-times trips;

Skills and Scholarship

Programing   Pytorch (proficient), sklearn (proficient), R (tidyverse competent), C (competent)

Scholarship   National encouragement scholarship 2019, 2020 (3/63); First Prize Scholarship 2018 (4/63)

Honors   Outstanding Graduates 2021 (2/63); Excellent Student Cadre 2019 (3/63); Excellent student 2018 2020 (2/63)

Language   TOFEL 100 (R:27 L:26 S:23 W:24), GRE 327 (157+170)