

Yuchen Xiao

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RESEARCH INTERESTS

Applied and Computational Harmonic Analysis

- Wavelets/Framelets Theory, Discrete Wavelet Transform
- Fast Fourier Transform, Scientific Computing

Optimization and Approximation Theory

- Numerical Analysis
- Image/Signal Processing
- Deep/Machine Learning

Spherical Designs

- Construction and Verification
- Application

EDUCATION

City University of Hong Kong, Hong Kong, SAR China

- PhD in Applied Mathematics

Sep 2020 – Aug 2024

Jinan University, Guangzhou, China

- MPhil in Computational Mathematics
- BSc in Mathematics and Applied Mathematics

Sep 2016 – Jun 2019

Sep 2012 – Jun 2016

HONOURS & SCHOLARSHIPS

SCHOLARSHIPS

- City University of Hong Kong
 - Research Tuition Scholarship 2023 – 2024
 - Research Tuition Scholarship 2021 – 2022
- Jinan University
 - Scholarship for Postgraduate Students, The First Prize 2018 – 2019
 - Scholarship for Postgraduate Students, The First Prize 2017 – 2018
 - Scholarship for Postgraduate Students, The First Prize 2016 – 2017
 - Entrance Scholarship for Excellent Recommendation Free Test Master's Degree 2016
 - Cambridge Academic Development Seminar Special Scholarship 2016
 - Scholarship for Undergraduate Students, The Second Prize 2015 – 2016
 - Arawana Scholarship 2015
 - Undergraduate Innovative Talent Special Scholarship 2015

HONOURS

- City University of Hong Kong
 - CSCI Excellent Paper Award 2024
- Jinan University
 - The Best Graduation Thesis 2016
 - The Best Graduation Thesis in College 2016
 - Outstanding graduates in College 2016
 - Outstanding Graduate Technology Innovation Award 2016
 - The Second Prize of Excellent Intern in Inspur Corporation 2015
 - Excellent student of the Mathematics Student Union 2012 – 2013

ACTIVITIES

PRESENTATIONS

- 10th International Congress on Industrial and Applied Mathematics (ICIAM), Tokyo Aug 2023
 - Presentation: *Spherical framelets from spherical designs*
- International Conference on Applied Mathematics 2023 (ICAM), Hong Kong May 2023
 - Presentation: *Spherical framelets from spherical designs*

- 2020 Workshop on Optimal Configuration and Related Topics, Chengdu Jan 2020
 - Presentation: *Numerical construction of spherical t-designs by Barzilai-Borwein method*

VISITS

- **University of Cambridge**, Cambridge, Britain Aug 2016 – Sep 2016
 - Visiting Student in *Cambridge Academic Development Seminar Program*

PUBLICATIONS

JOURNAL PUBLICATIONS

1. Yuchen Xiao and Xiaosheng Zhuang. Spherical framelets from spherical designs. *SIAM Journal on Imaging Sciences*, 16(4):2072–2104, 2023
2. Yuchen Xiao and Xiaosheng Zhuang. Adaptive directional haar tight framelets on bounded domains for digraph signal representations. *Journal of Fourier Analysis and Applications*, 27:1–26, 2021
3. Congpei An and Yuchen Xiao. Numerical construction of spherical t-designs by barzilai-borwein method. *Applied Numerical Mathematics*, 150:295–302, 2020

PREPRINTS

1. Yuchen Xiao and Xiaosheng Zhuang. Spherical designs for function approximation and beyond. *arXiv preprint arXiv:2311.18333*, 2023

CONFERENCE PROCEEDINGS

1. Xiaosheng Zhuang and Yuchen Xiao. Denoising on sphere via large spherical t-designs and spherical framelets. In *2023 International Conference on Sampling Theory and Applications (SampTA)*, pages 1–5, 2023
2. Jinlan Chen, Yuchen Xiao, and Jialiang Zhou. Comprehensive evaluation and prediction model of sustainable development. In *2015 Joint International Mechanical, Electronic and Information Technology Conference (JIMET-15)*, pages 565–569, 2015

PROJECTS & COMPETITIONS

PROJECTS

- The Dynamic Model of Predicting Bus Arriving Time Jul 2014 – Jul 2015
 - Foundation: Student's Platform for Innovation and Entrepreneurship Training Program (No. 1055914151)
- The Dynamic Model of Adjusting Bus Arriving Time Jul 2015 – Jul 2016
 - Foundation: The Challenge Cup-the Ministry of Education (No. 15112053)
- Algorithm Research of Commodity Information Pushing Mechanism Based on Complex Network Community Structure Jul 2014 – Jul 2015
 - Foundation: Student's Platform for Innovation and Entrepreneurship Training Program (No. 1055914152)
- Research on Recommendation Algorithm of Mixed Commodity Information Based on Community Discovery Jul 2015 – Jul 2016
 - Foundation: The Challenge Cup-the Ministry of Education (No. 15112005)

COMPETITIONS

- Postgraduate Academic Forum on Big Data and Supercomputing Technology 2016
 - Prize: The Second Prize of Excellent Conference Papers in Guangdong Province.
- Jinan University Undergraduate Innovation Competition 2015
 - Prize: The Winning Prize of Innovation Competition in Jinan University.
 - It is a platform to present the selected project of *The Excellent Conclusion Report* in university (Selected, 5%).
- Mathematical Contest In Modelling (MCM/ICM) 2015
 - Prize: The Honourable Mention of the MCM in USA.
 - The topic of MCM: *Comprehensive Evaluation and Prediction Model of Sustainable Development*.
- China Undergraduate Mathematical Contest in Model (CUMCM) 2014
 - Prize: The Third Prize of the CUMCM in Guangdong province.
 - The topic of CUMCM: *Chang E III soft landing trajectory design and control strategy*.
- The Chinese Mathematics Competitions (CMC) 2013
 - Prize: The Second Prize of the fifth CMC in Guangdong province.
 - The main content involves Mathematical Analysis and Advanced Algebra.

GRANTS

INTERNAL

- UGC Conference Grants for ICIAM 2023 2023

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| ACADEMIC SERVICE | REFEREE | |
| | ▪ International Joint Conference on Artificial Intelligence (IJCAI) | 2024 |
| | MEMBERSHIP | |
| | ▪ Society for Industrial and Applied Mathematics (SIAM) | Jul 2023 |
| TEACHING EXPERIENCE | ▪ City University of Hong Kong | Sep 2020 – Dec 2023 |
| | <ul style="list-style-type: none"> • TA in Math Help Center (2020 - now) • TA in MA1200 - Calculus and Basic Linear Algebra I (20-21 Sem A-B, 22-23 Sem B) • TA in MA1201 - Calculus and Basic Linear Algebra II (20-21 Sem A, 21-22 Sem B) • TA in MA1300 - Enhanced Calculus and Linear Algebra I (22-23 Sem A) • TA in MA2172 - Applied Statistics for Sciences and Engineering (20-21 Sem A-B, 23-24 Sem A) • TA in MA2185 - Discrete Mathematics (21-22 Sem A) • TA in MA2507 - Computing Mathematics Laboratory (22-23 Sem B) • TA in MA2506, MA2510 - Probability and Statistics (20-21 Sem B) | |
| | ▪ Jinan University | Sep 2016 – Jul 2018 |
| | <ul style="list-style-type: none"> • TA in Linear Algebra • TA in Calculus • TA in Topology and Abstract Algebra | |
| WORK EXPERIENCE | ▪ Research Assistant in City University of Hong Kong | Sep 2019 – Sep 2020 |
| | ▪ Intern as Assistant of General Manager in Inspur Corporation | Jul 2015 – Sep 2015 |
| | ▪ Intern as Activity officer in Mathematics Student Union | Sep 2012 – Jul 2013 |
| SKILLS | SOFTWARE | |
| | <ul style="list-style-type: none"> ▪ Proficient in \LaTeX and MATLAB. ▪ Good at Linux (Shell), R and Python. ▪ Familiar with C, Maple and Adobe Photoshop. | |
| | LANGUAGES | |
| | ▪ Mandarin, Cantonese, English and Spanish. | |
| INTERESTS | Photography, cooking, guitar, soccer and taekwondo. | |