ZEXIN LIU

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EDUCATION

University of Utah, Salt Lake City, Utah, U.S. 2017.08 - present
Ph.D. in Mathematics (Advisor: Prof. Akil Narayan)

Beihang University, Beijng, China 2012.08 - 2016.06
B.S. in Applied Mathematics (Advisor: Prof. Peng Wang)

RESEARCH INTEREST

Broadly speaking, my research interests are numerical analysis, scientific computing, and uncertainty quantification. Currently, I'm working on:

- Building UncertainSCI(a Python-based toolkit that estimate model and parametric uncertainty, with a particular emphasis on needs for biomedical simulations and applications)
- Orthogonal Polynomial approximation algorithms in high dimension
- Analysis in fractional PDEs using Kato's formula and RBF-FD method

PUBLICATIONS

1. On the computation of recurrence coefficients for multivariate orthogonal polynomials (with A.Narayan), preprint.
2. Numerical Approximation of Fractional Powers of Elliptic Operators with Kato's formula (with A.Narayan), preprint.
3. UncertainSCI: a Python-based toolkit that harnesses modern techniques to estimate model and parametric uncertainty (with A.Narayan and Jess D Tate), preprint.
4. On the computation of recurrence coefficients for univariate orthogonal polynomials, Z.Liu, A.Narayan (2021), submitted.
5. Using UncertainSCI to Quantify Uncertainty in Cardiac Simulations, Lindsay C Rupp, Zexin Liu, Jake A Bergquist, Sumientra Rampersad, Dan White, Jess D Tate, Dana H Brooks, Akil Narayan and Rob S MacLeod, Computing in Cardiology Conference (2020), DOI: 10.22489.

ACADEMIC INVOLVEMENT

- ICERM's semester program workshop "Algorithms for Dimension and Complexity Reduction", Brown University, Providence, RI, 2020.03.
- PRIME group's meeting, Beihang University, Beijing, China, 2019.05. (present)
- SIAM Wasatch Student Chapters Conference, Utah State University, Logan, UT, 2019.04. (present)
- Recruitment Lightning Talks of Math Department, University of Utah, Salt Lake City, UT, 2019.03. (present)

- Applied Math Collective of Math Department, University of Utah, Salt Lake City, UT, 2019.03. (present)
- The first International Conference on Quantification of Uncertainty in Engineering, Sciences and Technology (QUEST), Beihang University, Beijing, China, 2015.10.
- Summer Workshop on Uncertainty Quantification, Beihang University, Beijing, China, 2015.08.

AWARDS & HONORS

- Major Fellowship in College Contest, Beihang University, 2015.
- First Prize in China Undergraduate Mathematical Contest in Modeling, Beijing, 2015.
- Outstanding Volunteer Award, Beihang University, 2012.

TECHNICAL SKILLS

- **Programming:** Python(with NumPy, SciPy, Scikit-learn, Pandas), Matlab, R
- **DL and ML:** PyTorch, TensorFlow
- **Web and back-end:** HTML, Python(with Flask)
- **Version Control:** Git
- **Writing:** LaTeX, Markdown

TEACHING

- Fall 2017 - Spring 2018: Weekly tutoring at the Matheamtics Student Center, University of Utah.
- Spring 2018: MATH 2210-003/006 Calculus III (TA and Lab instrutor), University of Utah.
- Fall 2017: MATH 1310-004 Engineering Calculus I (Lab TA), University of Utah.