

Zixing Wang

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"To find what you love to do, to have high aspirations, to believe in yourselves and to keep a positive outlook in life."

Education

National University of Singapore(NUS)

M.S. in Statistics

21 Lower Kent Ridge Rd, Singapore, 119077

Aug. 2022 - Present

Shanghai Jiao Tong University(SJTU)

B.S. in Mathematics and Applied Mathematics (Wu Wenjun Honour Program)

800 Dongchuan Rd, Minhang District, Shanghai, China, 200240

Sep. 2018 - Jun. 2022

- Excellent graduates of Shanghai Jiao Tong University

Skills

Programming	Python, C++, Mysql, VB, VBA, R, Mathematica, Matlab, etc.
Working Software	Latex, Markdown, Git, Excel, PowerPoint, Word, etc.
Web Design	JavaScript, HTML, CSS
Languages	Chinese, English.

Research

Khovanov homology and knot concordance

Bachelor's dissertation

Shanghai Jiao Tong University

Dec. 2021 - Jun. 2022

- This paper mainly studies the relations between Khovanov homology and knot concordance. Based on a variant of the Khovanov homology developed by Lee, we can construct the Rasmussen invariant. It provides a lower bound for the slice genus of a knot. For alternating knots, it equals the signature. As an application, we introduce Piccirillo's elegant proof, which shows that the Conway knot is not slice.

A Generalized Determinant of Matrices and Applications

Research team leader

Shanghai Jiao Tong University

Jun. 2019 - Dec. 2020

- We gave a generalized definition of the determinant of matrices, which is compatible with the usual determinant for square matrices and keeps many important properties, such as being an alternating multilinear function, keeping multiplication formula and partly keeping the Cauchy-Binet's formula. As applications of the new theory, the generalized Cramer's rule and the generalized oriented volume are obtained.
- This program was rated as outstanding program and supported by NSFC and NSF of Shanghai Municipal. Our team has already written a paper 'A Generalized Determinant of Matrices and Applications' and has submitted it to 'Algebra Colloquium'.

Project

BldDb

Jun. 2022 - Present

- BldDb is a 3x3x3 Rubik's cube blindfolded algorithms database. This website includes thousands of algorithms including 3-style corner (all buffers), 3-style edge (all buffers), corner twist, edge flip, etc. It supports simplified Chinese, English and Japanese, and is compatible with mobile phones, PCs and tablets. The website provides many options for each case, so the users can select algorithm based on their own preference.

Commutator

Mar. 2022 - Present

- Let G be any group. If $a, b \in G$, then the commutator of a and b is the element $[a, b] = aba^{-1}b^{-1}$. This project is aimed at decomposing algorithms in commutator notation. For example, it decomposes $ab^4cba^{-1}b^{-2}c^{-1}b^{-3}$ to $[ab, b^3cb^2]$.

Customized Poker

Feb. 2021 - May. 2022

- You can design your own photo playing cards using 'Customized Poker' for print. For example, it can be used for commemorating teachers or students by making customized poker cards.

Future Direction

I want to engage in statistical analysis, modeling, and prediction, to learn and to discover with curiosity.