ZICHEN WANG

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EDUCATION

Cornell University, College of Arts and Sciences Ithaca, NY

B.A. in Computer Science and Math Expected, May 2024

GPA: 4.07 | Dean's List 2021FA, 2022SP

PUBLICATIONS AND PREPRINTS

** denotes equal contribution by all authors*

Revisiting a 2-Approximation for the *k*-MST Problem in Graphs Ithaca, NY

*with Emmett Breen, Renee Mirka (mentor), and David P. Williamson (mentor)** Jan 2022 - Aug 2022

- Proceedings of SIAM Symposium on Simplicity in Algorithms (SOSA) 2023
- Gave a 20-minute presentation at SODA/SOSA conference
- Revisited Garg's primal-dual algorithm for the *k*-MST problem and supplemented with rigorous proofs
- Introduced the novel concept of *kernels* to better study the structure of the spanning tree

Four-Periodic Infinite Staircase for Four-Dimensional Polydisk Ithaca, NY

*C. Farley, T. Holm (mentor), N. Magill, J. Schroder, Z. Wang, M. Weiler (mentor), and E. Zabelina** Jun 2022 - Jul 2022

- Accepted by Joint Math Meeting 2023, under the review of Involve Journal, and is our work in Cornell Summer Undergraduate Research Program (SPUR)
- Studied symplectic four-manifold ellipsoid embedding and computed a new family of infinite staircases
- Developed Python codes that quickly compute almost toric fibration and embedded contact homology

Closer to Cayuga's Waters: An Evaluation System of The Invasive *Hydrilla* Species Ithaca, NY

Zichen Wang, Franklin Deng, Mo Lyu, and Alexander Vladmirsky (mentor) Jan 2022 - Feb 2022

- Accepted by the Cornell Undergraduate Research Journal (CURJ) and is a revision of our work for the 2021 Cornell Math Contest in Modeling (CMCM)
- Derived an evaluation system that uses statistical inference to obtain real-time data of the invasive *Hydrilla* species in Cayuga Lake and predicts the future spread of the plant through stochastic Monte Carlo simulation

On 2-digit and 3-digit Kaprekar's Routine Nanjing. China

Zichen Wang, Wei Lu (mentor) Nov 2020 - Jan 2021

- Submitted to arXiv [math.NT]
- Solved the structures of the 2-digit and 3-digit Kaprekar transformation as well as the maximum 2-digit Kaprekar distance

EXPERIENCES

CS4999 Independent Research *with Steve Marschner (mentor)* Sep 2022 - *present*

- Researched on inverse rendering using signed distance function (SDF)
- Held hour-long weekly meetings to discuss project updates; plan to add more literature review in Spring 2023.
- Developed a custom renderer from scratch in C++ that leverages path integration and multiple importance sampling.

Cornell University Artificial Intelligence (CUAI) Sep 2022 - *present*

- CUAI is an undergraduate research group on machine learning. The group has numerous publications at top ML conferences, including NeurIPS, ICML, etc.

CS 4820 Introduction to Analysis of Algorithms Ithaca, NY

Teaching Assistant Jun 2022 – Jul 2022

- A course that teaches designing and analyzing algorithms, with an emphasis on problems arising in computing applications
- Graded homework and exams; held office hours and exam reviews

MATH 4901 Supervised Reading *with Liam Mazurowski (mentor)* Jan 2022 - May 2022

- Read Do Carmo's *Differential Geometry of Curves and Surface* and *Riemannian Geometry* and studied minimal surfaces

AWARDS

- Top 300, William Lowell Putnam Mathematical Competition. 2022