

# YOSUKE MIZUTANI

yos@cs.utah.edu | <https://www.cs.utah.edu/~yos/> | University of Utah | School of Computing  
50 South Central Campus Drive Room 3190, Salt Lake City, UT 84112 | +1 (801) 581-8224

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## RESEARCH INTERESTS

Parameterized algorithms and graph theory.

## EDUCATION

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| <b>University of Utah</b> , Salt Lake City, UT, USA                    | August 2020 – expected 2025 |
| Ph.D. in Computer Science / Advisor: Blair D. Sullivan                 |                             |
| <b>NC State University</b> , Raleigh, NC, USA                          | August 2017 – May 2020      |
| B.S. in Computer Science with a minor in Mathematics / Summa Cum Laude |                             |

## RESEARCH EXPERIENCE

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| <b>University of Utah</b> , Salt Lake City, UT, USA – <i>Research Assistant</i>  | August 2020 – present       |
| <ul style="list-style-type: none"> <li>Parameterized complexity of happy set problems; designing algorithms for several graph parameters</li> <li>Sparse dominating sets for metagenomics application; accepted at KDD 2022.</li> <li>Edge-weighted clique decomposition problems; working with biology datasets</li> <li>PACE 2021 cluster editing challenge: 6th place on the Exact track</li> </ul> |                             |
| <b>NC State University</b> , Raleigh, NC, USA – <i>Undergraduate Student Researcher</i>  | January 2018 – May 2020     |
| <ul style="list-style-type: none"> <li>Advisors: Matthias Stallmann and Aissa Oudjit</li> <li>The minimum independent dominating set problem; developing an exact solver</li> <li>Facility location problems, including the p-median problem; integer programming</li> </ul>   |                             |
| <b>The Institute of Statistical Mathematics</b> , Tokyo, JAPAN – <i>Researcher</i>   | August 2015 – December 2015 |
| <ul style="list-style-type: none"> <li>Bibliometrics; data analysis of co-authoring relationship between ten years' published research papers</li> </ul>   |                             |

## WORK EXPERIENCE

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| <b>Demand Side Science Co., LTD.</b> , Tokyo, JAPAN – <i>CTO / Senior VP / Full-stack Engineer</i> | April 2013 – November 2015 |
| <b>Nihon System Design Co., LTD.</b> , Tokyo, JAPAN – <i>Chief Server Engineer</i>                 | December 2003 – March 2013 |

## MANUSCRIPTS

- S. Jain, Y. Mizutani, B. D. Sullivan. Faster Decomposition of Weighted Graphs into Cliques using Fisher's Inequality. ArXiv:2206.07286.
- T. E. Reiter, L. Irber, A. A. Gingrich, D. Haynes, N. T. Pierce-Ward, P. T. Brooks, Y. Mizutani, D. Moritz, F. Reidl, A. D. Willis, B. D. Sullivan, C. T. Brown. Meta-analysis of metagenomes via machine learning and assembly graphs reveals strain switches in Crohn's disease. bioRxiv:10.1101/2022.06.30.498290.

## PEER-REVIEWED PUBLICATIONS

- Y. Mizutani, B. D. Sullivan. Parameterized Complexity of Maximum Happy Set and Densest k-Subgraph. *Proceedings of the 17th International Symposium on Parameterized and Exact Computation, 2022.*
- Y. Mizutani, A. Staker, B. D. Sullivan. Minimizing Congestion for Balanced Dominators. *Proceedings of the 28th ACM SIGKDD Conference on Knowledge Discovery and Data Mining, 2022*
- Y. Mizukami, Y. Mizutani, K. Honda, S. Suzuki, J. Nakano. An international research comparative study of the degree of cooperation between disciplines within mathematics and mathematical sciences: proposal and application of new indices for identifying the specialized field of researchers. *Behaviormetrika, 2017.*

### ***MAJOR PRESENTATIONS***

<b>Joint Math Meetings (JMM 2023)</b> , Boston, MA, USA	January 2023
Information Loss in Weighted Hypergraph Line Graphs and Clique Expansions	
<b>SIAM Workshop on Network Science (SIAM-NS)</b> , Online	September 2022
Minimizing Congestion for Balanced Dominators	
<b>International Symposium on Parameterized and Exact Computation (IPEC)</b> , Potsdam, Germany	September 2022
Some Happy FPT Results: Improved Parameterized Complexity of Happy Set Problems	
<b>ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)</b> , Washington DC, USA	August 2022
Minimizing Congestion for Balanced Dominators	
<b>International IBM Cloud Academy Conference (ICA CON)</b> , Tokyo, JAPAN	May 2018
An Analysis of Abstract Texts of Academic Papers Using Watson Natural Language Understanding	
<b>ISM High Performance Computing Conference (HPCCon)</b> , Tokyo, JAPAN	October 2015
A Network Analysis for Relationship of Researchers based upon the Co-authored Information and Other Attributes on "Web of Science" using Apache Spark and GraphX	
<b>Scala Days 2015</b> , San Francisco, CA, USA	March 2015
Ad tech, Scala, and Performance Tuning	

### ***MAJOR ACTIVITIES***

<b>University of Utah School of Computing Committees</b>	
School of Computing Graduate Student Advisory Committee (GradSAC)	2021-2022
<b>American Mathematical Society (AMS) Mathematics Research Communities</b>	
Models and Methods for Sparse (Hyper) Network Science, Buffalo, NY, USA	June 2022
<b>Parameterized Algorithms and Computational Experiments Challenge (PACE)</b>	
PACE 2022: Directed Feedback Vertex Set (8 <sup>th</sup> place)	June 2022
PACE 2021: Cluster Editing (6 <sup>th</sup> place)	June 2021
<b>International Collegiate Programming Contest (ICPC)</b>	
Rocky Mountain Regional, Provo, UT, USA (representing the University of Utah)	October 2021
North America Championship, Atlanta, GA, USA (representing NC State University)	February 2020
Mid-Atlantic USA Regional, Durham, NC, USA (representing NC State University)	November 2019

### ***TEACHING EXPERIENCE***

<b>Teaching Assistant</b>	
Graduate Algorithms (CS 5150/6150), University of Utah	Fall 2021, Fall 2022