

ANIKET MURHEKAR

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RESEARCH INTERESTS

Theoretical Computer Science: Fair Resource Allocation; Algorithmic Game Theory; Approximation Algorithms
Artificial Intelligence: Fair Machine Learning; Multi-agent Systems; Learning-augmented Algorithms

EDUCATION

University of Illinois at Urbana-Champaign

Advisors: Prof. Jugal Garg & Prof. Ruta Mehta

Ph.D., Computer Science, 2020 - 2025 (expected 05/25)

4.0/4.0

M.S., Computer Science, 2018 - 2020

4.0/4.0

Indian Institute of Technology (IIT), Bombay

Advisor: Prof. S. Akshay

B.Tech. (Honors) in Computer Science and Engineering, 2014 - 2018

9.18/10

INTERNSHIPS

Adobe Research, San Jose, USA

May 2022 - Aug 2022

Research Internship, "Learning-Augmented Algorithms for Resource Allocation on the Cloud"

Adobe Research, Bangalore, India

May 2017 - Aug 2017

Research Internship, "Vocabulary Tailored Automatic Text Summarization"

Institute of Science and Technology, Austria

May 2016 - Aug 2016

Research Internship, "Techniques for Automated Recurrence Analysis"

AWARDS & HONORS

Selected as a participant to attend the 10 th Global Young Scientists Summit, Singapore	2021
Narotam Sekhsaria Post Graduate Scholar: Awarded to 15 Indian students annually	2020
Conference Travel Grant: Awarded by the College of Engineering, UIUC	2020
Siebel Scholar : Awarded to 90 graduate students from 16 select schools globally (\$35000 prize)	2019
Institute Academic Prize , IIT Bombay for exceptional academic performance	2015
Silver Medal, 46th International Chemistry Olympiad	2014
All India Rank 19 in IIT-JEE Advanced, among 150,000 candidates	2014
Infosys Award: Awarded to International Olympiad Medal Winners	2014
Gold Medal at the Indian National Mathematics Olympiad	2013
KVPY Fellowship, Government of India	2013
NTSE Scholarship, Government of India	2010

PUBLICATIONS

Author names are in alphabetical order in most publications as per the TCS tradition

- [**NeurIPS'23**] [A. Murhekar](#), B. Chaudhary, Z. Yuan, B. Li, R. Mehta. "Incentives in Federated Learning: Equilibria, Dynamics, and Mechanisms for Welfare Maximization." *Neural Information Processing Systems (NeurIPS)*, 2023.
- [**SPAA'23**] [A. Murhekar](#), D. Arbour, T. Mai, A. Rao. "Dynamic Vector Bin Packing for Resource Allocation on the Cloud." *Symposium on Parallelism in Algorithms and Architectures (SPAA)*, 2023. [[arXiv](#)]
- [**IJCAI'23**] J. Garg, [A. Murhekar](#), J. Qin. "New Algorithms for the Fair and Efficient Allocation of Indivisible Chores." *International Joint Conference on Artificial Intelligence (IJCAI)*, 2023. [[arXiv](#)]
- [**FSTTCS'23**] [A. Murhekar](#), E. Sharma. "Nash Equilibria in Two Player Games Repeated Until Collision." *Foundations of Software Technology and Theoretical Computer Science (FSTTCS)*, 2023. [[arXiv](#)]

12. [WINE'22] J. Garg, E. Husic, A. Murhekar, L. Vegh. "Tractable Fragments of the Maximum Nash Welfare Problem." *Conference on Web and Internet Economics (WINE)*, 2022. [\[arXiv\]](#)
11. [AAMAS'22] V. Livanos, R. Mehta, A. Murhekar. "(Almost) Envy-Free, Proportional and Efficient Allocations of an Indivisible Mixed Manna." *International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS)*, 2022. [\[arXiv\]](#)
10. [AAAI'22] J. Garg, A. Murhekar, J. Qin. "Fair and Efficient Allocations of Bivalued Chores." *AAAI Conference on Artificial Intelligence (AAAI)*, 2022. [\[arXiv\]](#)
9. [AAAI'21] J. Garg, A. Murhekar. "On Fair and Efficient Allocations of Indivisible Goods." *AAAI Conference on Artificial Intelligence (AAAI)*, 2021. [\[link\]](#)
8. [SAGT'21] J. Garg, A. Murhekar. "Computing Fair and Efficient Allocations with Few Utility Values." *14th International Symposium on Algorithmic Game Theory (SAGT)*, 2021. **Invited** to the **TCS Special Issue** for SAGT 2021. [\[link\]](#)
7. [FSTTCS'21] J. Garg, P. Kulkarni, A. Murhekar. "On Fair and Efficient Allocations of Indivisible Public Goods." *Foundations of Software Technology and Theoretical Computer Science (FSTTCS)*, 2021. [\[arXiv\]](#)
6. [AAMAS'20] A. Murhekar, R. Mehta. "Approximate Nash Equilibria of Imitation Games: Algorithms and Complexity." *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 2020. [\[link\]](#)
5. [STACS'20] S. Akshay, N. Balaji, A. Murhekar, R. Varma, N. Vyas. "Near-optimal complexity bounds for fragments of the Skolem Problem." *Symposium on Theoretical Aspects of Computer Science (STACS)*, 2020.
4. [COLING'18] K. Krishna, A. Murhekar, S. Sharma, B. V. Srinivasan. "Vocabulary Tailored Summary Generation." *International Conference on Computational Linguistics (COLING)*, 2018. [\[link\]](#)
3. [CAV'17] K. Chatterjee, H. Fu, A. Murhekar. "Automated Recurrence Analysis for Almost-Linear Expected-Runtime Bounds." *Computer Aided Verification (CAV)*, 2017. [\[link\]](#)

PREPRINTS

2. B. Chaudhary, A. Murhekar, Z. Yuan, B. Li, R. Mehta, A. Procaccia. "Rank-wise Proportional Federated Learning." 2023. *Under submission.*
1. J. Garg, A. Murhekar, J. Qin. "Weighted EF1 and PO Allocations with Few Types of Agents or Chores." 2023. *Under submission.*

PATENTS

"Generating a Targeted Summary of Textual Content Tuned to a Target Audience Vocabulary", Saumitra Sharma, Kundan Krishna, Balaji Vasan Srinivasan, Aniket Murhekar, 2019. [\[link\]](#)

SERVICE

Program Committee Member: AAAI 2023, AAMAS 2023, AAAI 2022.

Reviewer: FOCS '23, SODA '22, AAAI '22, TheWebConf '22, MFCS '22, CONCUR '22, SAGT '22, EC '21-22

Graduate Teaching Assistant, at UIUC for Discrete Structures 2018 - 2023

Mentor, Mentoring Undergraduates in Science and Engineering (MUSE) Program, UIUC 2020 - 2021

Mentor, Department Academic Mentorship Program, IIT Bombay 2017 - 2018

Head Panelist, BitStream: CSE Newsletter, IIT Bombay 2016 - 2017

TECHNICAL SKILLS

Programming	C/C++, Python, Bash, TensorFlow
Softwares & Tools	R, MATLAB, L ^A T _E X, PostgreSQL
Web Development	HTML, CSS, JavaScript, JQuery