

Vignesh Viswanathan

✉ vviswanathan@umass.edu • 🌐 Webpage • 🏠 Github • 📄 Google Scholar

Education

PhD in Computer Science

University of Massachusetts, Amherst

July 2020 – Fall 2026 (Expected)

Thesis: *Fair Allocation of Indivisible Goods: New Algorithms and Hardness Results*

Committee: Yair Zick (Advisor), Uriel Feige, Hung Le, Andrew McGregor

BTech in Computer Science And Engineering

Indian Institute of Technology, Kharagpur

June 2016 – May 2020

CGPA: 9.71/10

Research Interests

Fair Allocation, Mechanism Design, Graph Theory

Selected Awards and Honors

2022: College Outstanding Synthesis Award, Manning College of Information and Computer Sciences, UMass Amherst

2021: Robin Popplestone Graduate Fellowship, UMass Amherst

2020: Ranked 3rd among all computer science undergraduate students at IIT Kharagpur

2019: IIT KGP Foundation Award, supporting a research internship at NUS, Singapore

Work Experience

Adobe Research

Research Intern, Data Science Lab

Summer 2024

Mentor: Raghav Addanki.

Worked on improving the latency of large language models and AI assistants.

Microsoft Research

Research Intern, Causal Machine Learning Group

Summer 2022

Mentors: Tobias Schnabel and Robert Ness.

Worked on designing and evaluating attribution methods in sequential decision problems.

Journal Publications

Unless otherwise noted, authors are ordered alphabetically. For papers ordered by contribution, * denotes the lead author(s).

[J3] Vignesh Viswanathan and Yair Zick. *A General Framework For Fair Allocation under Matroid Rank Valuations*. ACM Transactions on Economics and Computation, 2025.

[J2] Jenny Hamer, Nicholas Perello, Jake Valladares, **Vignesh Viswanathan** and Yair Zick. *Simple Steps to Success: A Method for Step-Based Counterfactual Explanations*. Transactions on Machine Learning Research, 2024.

[J1] Hadi Hosseini, Andrew McGregor, Justin Payan, Rik Sengupta, Rohit Vaish and **Vignesh Viswanathan**. *Graphical House Allocation with Identical Valuations*. Autonomous Agents and Multi-Agent Systems (JAAMAS), 2024.

Conference Publications

[C14] Vignesh Viswanathan. *Improved Hardness Results for Nash Social Welfare, Budgeted Allocation and GAP via the Unique Games Conjecture*. In Proceedings of the 27th ACM Conference on Economics and Computation (EC), 2026.

[C13] Zack Fitzsimmons, **Vignesh Viswanathan** and Yair Zick. *On the Hardness of Fair Allocation under Ternary Valuations*. In Proceedings of the 24th International Conference on Autonomous Agents and Multi-agent Systems

(AAMAS), 2025.

[C12] Zhengmian Hu*, Tong Zheng, **Vignesh Viswanathan**, Ziyi Chen, Ryan A. Rossi, Yihan Wu, Dinesh Manocha and Heng Huang. *Towards Optimal Multi-draft Speculative Decoding*. In Proceedings of the 13th International Conference on Learning Representations (ICLR), 2025.

[C11] Hadi Hosseini, Andrew McGregor, Rik Sengupta, Rohit Vaish and **Vignesh Viswanathan**. *Tight Approximations for Graphical House Allocation*. In Proceedings of the 23rd International Conference on Autonomous Agents and Multi-agent Systems (AAMAS), 2024.

[C10] Gagan Biradar, Yacine Izza, Elita Lobo, **Vignesh Viswanathan** and Yair Zick. *Axiomatic Aggregations of Abductive Explanations*. In Proceedings of the 38th AAAI Conference on Artificial Intelligence (AAAI), 2024.

[C9] Cyrus Cousins, **Vignesh Viswanathan** and Yair Zick. *The Good, the Bad and the Submodular: Fairly Allocating Mixed Manna Under Order-Neutral Submodular Preferences*. In Proceedings of the 19th Conference on Web and Internet Economics (WINE), 2023.

[C8] Cyrus Cousins, **Vignesh Viswanathan** and Yair Zick. *Dividing Good and Great Items Among Agents with Bivalued Submodular Valuations*. In Proceedings of the 19th Conference on Web and Internet Economics (WINE), 2023.

[C7] **Vignesh Viswanathan** and Yair Zick. *A General Framework For Fair Allocation with Matroid Rank Valuations*. In Proceedings of the 24th ACM Conference on Economics and Computation (EC), 2023.

[C6] **Vignesh Viswanathan** and Yair Zick. *Yankee Swap: A Fast and Simple Fair Allocation Mechanism for Matroid Rank Valuations*. In Proceedings of the 22nd International Conference on Autonomous Agents and Multi-agent Systems (AAMAS), 2023.

[C5] Hadi Hosseini, Justin Payan, Rik Sengupta, Rohit Vaish and **Vignesh Viswanathan**. *Graphical House Allocation*. In Proceedings of the 22nd International Conference on Autonomous Agents and Multi-agent Systems (AAMAS), 2023.

[C4] Justin Payan, Rik Sengupta and **Vignesh Viswanathan**. *Relaxations of Envy-Freeness Over Graphs*. In Proceedings of the 22nd International Conference on Autonomous Agents and Multi-agent Systems (AAMAS), 2023. (Extended Abstract)

[C3] **Vignesh Viswanathan***, Megha Bose* and Praveen Paruchuri. *Moving Target Defense under Uncertainty for Web Applications*. In Proceedings of the 21st International Conference on Autonomous Agents and Multi-agent Systems (AAMAS), 2022. (Extended Abstract)

[C2] Omer Lev, Neel Patel, **Vignesh Viswanathan** and Yair Zick. *The Price is (Probably) Right: Learning Market Equilibria from Samples*. In Proceedings of the 20th International Conference on Autonomous Agents and Multi-agent Systems (AAMAS), 2021.

[C1] Hau Chan, Long Tran-Thanh and **Vignesh Viswanathan**. *Fighting Wildfires under Uncertainty: A Sequential Resource Allocation Approach*. In Proceedings of the 29th International Joint Conference on Artificial Intelligence (IJCAI), 2020.

Book Chapters

[B1] Arpita Biswas, Justin Payan, Rik Sengupta and **Vignesh Viswanathan**. *The Theory of Fair Allocation Under Structured Set Constraints*. In Ethics in Artificial Intelligence: Bias, Fairness and Beyond (Springer), 2023.

Working Papers

[W5] **Vignesh Viswanathan**. *A Better-than- $e^{1/e}$ Approximation Algorithm for Nash Social Welfare under Additive Valuations*. In Submission.

[W4] Siddharth Barman and **Vignesh Viswanathan**. *Equitable Colorings of Vertex Weighted Graphs*. In Submission.

[W3] **Vignesh Viswanathan**. *Some Improved Results on Fair and Balanced Graph Partitions*. In Submission.

[W2] Telikepalli Kavitha, Surya Panchapakesan, Rohit Vaish, **Vignesh Viswanathan** and Jatin Yadav. *Best of Both Worlds Guarantees with Fairer Endings*. In Submission.

[W1] Alon Eden, **Vignesh Viswanathan** and Yair Zick. *Stable Matching under Matroid Rank Valuations*. In Submission.

Talks

Bangalore Theory Seminar Series

Improved Hardness Results for Nash Social Welfare, Budgeted Allocation and GAP. 2026

AMD Workshop at FSTTCS 2024

Fair Allocation under Simple Valuations 2024

Adobe Data Science Lab Talk Series

An Introduction to Computational Fair Division 2024

Theory Reading Group, Dartmouth College

Yankee Swap: A Fast and Simple Fair Allocation Mechanism for Matroid Rank Valuations 2023

COMSOC, Haifa, Israel and University of Waterloo

Learning Market Equilibria from Samples 2021

Teaching

Teaching Assistant

CS 611: Advanced Algorithms Spring 2025

Teaching Assistant

CS 590T: Algorithmic Fairness and Strategic Behaviour Fall 2022

Service

Organizer: UMass Theory Seminar, weekly talks (2023–2025)

Program Committee: GAIW Workshop @ AAMAS (2025, 2026); CFD Workshop @ IJCAI (2023, 2024, 2025)

Reviewer / Sub-reviewer: SODA (2026, 2027), AAMAS (2025, 2026), STACS 2024, CIKM 2022, WWW 2021, ICLR 2021, NeurIPS 2020