

# RUPERT FREEMAN

University of Virginia Darden School of Business

(916) 260-1914 ◊ FreemanR@darden.virginia.edu ◊ www.rupertfreeman.com

## APPOINTMENTS

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<b>University of Virginia Darden School of Business</b> <i>Assistant Professor</i> Quantitative Analysis Group	2020-present
<b>Microsoft Research</b> <i>Postdoctoral Researcher</i> NYC Algorithmic Economics Group	2018-2020

## EDUCATION

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<b>Ph.D. in Computer Science</b> <i>Duke University</i> Advisor: Vincent Conitzer	2013-2018
<b>Bachelor of Science (First Class Honours) in Mathematics</b> <i>University of Auckland, New Zealand</i>	2009-2012

## RESEARCH INTERNSHIPS AND VISITS

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<b>Microsoft Research, NYC</b> Research Intern	Summer 2016, 2017
<b>Simons Institute for the Theory of Computing</b> Visiting student as part of the program on Economics and Computation	Fall 2015

## FELLOWSHIPS AND AWARDS

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Duke Computer Science Department Outstanding Dissertation Award	2018
Facebook Fellowship	2017-2019
IBM Ph.D. Fellowship (Declined in order to accept Facebook award)	2017-2018
Duke Computer Science Department Outstanding Preliminary Exam Award	2016
Duke Computer Science Department Outstanding Teaching Assistant Award	2014

## JOURNAL PUBLICATIONS

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Haris Aziz, Markus Brill, Vincent Conitzer, Edith Elkind, Rupert Freeman, and Toby Walsh. *Justified Representation in Approval-Based Committee Voting*. In Social Choice and Welfare. (Supersedes the AAAI-15 paper below)

## CONFERENCE PUBLICATIONS

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Rupert Freeman, David M. Pennock, Chara Podimata, and Jennifer Wortman Vaughan. *No-Regret and Incentive-Compatible Prediction with Expert Advice*. To appear in Proceedings of the Thirty-Seventh International Conference on Machine Learning (ICML-20).

Rupert Freeman, Nisarg Shah, and Rohit Vaish. *Best of Both Worlds: Ex-ante and Ex-Post Fairness in Resource Allocation*. To appear in Proceedings of the 21st ACM Conference on Economics and Computation (EC-20).

Rupert Freeman, Anson Kahng, and David M. Pennock. *Representation in Approval Elections with a Variable Number of Winners*. To appear in Proceedings of the Twenty-Ninth International Joint Conference on Artificial Intelligence (IJCAI-20), Yokohama, Japan, 2020.

Rupert Freeman, Sujoy Sikdar, Rohit Vaish, and Lirong Xia. *Equitable Allocations of Indivisible Chores*. In Proceedings of the Nineteenth International Joint Conference on Autonomous Agents and Multi Agent Systems (AAMAS-20), Auckland, New Zealand, 2020.

Rupert Freeman, David M. Pennock, Dominik Peters, and Bo Waggoner. *Preventing Arbitrage from Collusion when Eliciting Probabilities*. In Proceedings of the Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI-20), New York City, New York, USA, 2020.

Rupert Freeman, Sujoy Sikdar, Rohit Vaish, and Lirong Xia. *Equitable Allocations of Indivisible Goods*. In Proceedings of the Twenty-Eighth International Joint Conference on Artificial Intelligence (IJCAI-19), Macao, China, 2019.

Rupert Freeman, David M. Pennock, Dominik Peters, and Jennifer Wortman Vaughan. *Truthful Aggregation of Budget Proposals*. In Proceedings of the 20th ACM Conference on Economics and Computation (EC-19), Pheonix, Arizona, USA, 2019.

Rupert Freeman, David M. Pennock, and Jennifer Wortman Vaughan. *An Equivalence Between Wagering and Fair-Division Mechanisms*. In Proceedings of the Thirty-Third AAAI Conference on Artificial Intelligence (AAAI-19), Honolulu, Hawaii, USA, 2019.

Vincent Conitzer, Rupert Freeman, Nisarg Shah, and Jennifer Wortman Vaughan. *Group Fairness for the Allocation of Indivisible Goods*. In Proceedings of the Thirty-Third AAAI Conference on Artificial Intelligence (AAAI-19), Honolulu, Hawaii, USA, 2019.

Rupert Freeman and David M. Pennock. *An Axiomatic View of the Parimutuel Consensus Wagering Mechanism*. In Proceedings of the Twenty-Seventh International Joint Conference on Artificial Intelligence (IJCAI-18), Stockholm, Sweden, 2018.

Rupert Freeman, Seyed Majid Zahedi, Vincent Conitzer, and Benjamin Lee. *Dynamic Proportional Sharing: A Game-Theoretic Approach*. In Proceedings of the ACM SIGMETRICS International Conference on Measurement and Modeling of Computer Systems, Irvine, California, USA, 2018.

Jens Witkowski, Rupert Freeman, Jennifer Wortman Vaughan, David M. Pennock, and Andreas Krause. *Incentive-Compatible Forecasting Competitions*. In Proceedings of the Thirty-Second AAAI Conference on Artificial Intelligence (AAAI-18), New Orleans, Louisiana, USA, 2018.

Rupert Freeman, Seyed Majid Zahedi, and Vincent Conitzer. *Fair and Efficient Social Choice in Dynamic Settings*. In Proceedings of the Twenty-Sixth International Joint Conference on Artificial Intelligence (IJCAI-17), Melbourne, Australia, 2017.

Vincent Conitzer, Rupert Freeman, and Nisarg Shah. *Fair Public Decision Making*. In Proceedings of the 18th ACM Conference on Economics and Computation (EC-17), Cambridge, Massachusetts, USA, 2017.

Rupert Freeman, David M. Pennock, and Jennifer Wortman Vaughan. *The Double Clinching Auction for Wagering*. In Proceedings of the 18th ACM Conference on Economics and Computation (EC-17), Cambridge, Massachusetts, USA, 2017.

Rupert Freeman, Sébastien Lahaie, and David Pennock. *Crowdsourced Outcome Determination in Prediction Markets*. In Proceedings of the Thirty-First AAAI Conference on Artificial Intelligence (AAAI-17), San Francisco, California, USA, 2017.

Markus Brill, Rupert Freeman, Svante Janson, and Martin Lackner. *Phragmén’s Voting Methods and Justified Representation*. In Proceedings of the Thirty-First AAAI Conference on Artificial Intelligence (AAAI-17), San Francisco, California, USA, 2017.

Rupert Freeman, Sam Haney, and Debmalya Panigrahi. *On the Price of Stability of Undirected Multicast Games*. In Proceedings of the Twelfth Conference on Web and Internet Economics (WINE-16), Montreal, Canada, 2016.

Haifeng Xu, Rupert Freeman, Vincent Conitzer, Shaddin Dughmi, and Milind Tambe. *Signaling in Bayesian Stackelberg Games*. In Proceedings of the Fifteenth International Joint Conference on Autonomous Agents and Multi Agent Systems (AAMAS-16), Singapore, 2016.

Markus Brill, Vincent Conitzer, Rupert Freeman, and Nisarg Shah. *False-Name-Proof Recommendations in Social Networks*. In Proceedings of the Fifteenth International Joint Conference on Autonomous Agents and Multi Agent Systems (AAMAS-16), Singapore, 2016.

Vincent Conitzer, Rupert Freeman, Markus Brill, and Yuqian Li. *Rules for Choosing Societal Trade-offs*. In Proceedings of the Thirtieth AAAI Conference on Artificial Intelligence (AAAI-16), Phoenix, Arizona, 2016.

Markus Brill, Rupert Freeman, and Vincent Conitzer. *Computing Possible and Necessary Equilibrium Actions (and Bipartisan Set Winners)*. In Proceedings of the Thirtieth AAAI Conference on Artificial Intelligence (AAAI-16), Phoenix, Arizona, 2016.

Rupert Freeman, Markus Brill, and Vincent Conitzer. *General Tiebreaking Schemes for Computational Social Choice*. In Proceedings of the Fourteenth International Joint Conference on Autonomous Agents and Multi Agent Systems (AAMAS-15), Istanbul, Turkey, 2015.

Vincent Conitzer, Markus Brill, and Rupert Freeman. *Crowdsourcing Societal Tradeoffs*. In Proceedings of the Fourteenth International Joint Conference on Autonomous Agents and Multi Agent Systems (AAMAS-15) Blue Sky Ideas Track, Istanbul, Turkey, 2015.

Haris Aziz, Markus Brill, Vincent Conitzer, Edith Elkind, Rupert Freeman, and Toby Walsh. *Justified Representation in Approval-Based Committee Voting*. In Proceedings of the Twenty-Ninth AAAI Conference on Artificial Intelligence (AAAI-15), Austin, Texas, 2015.

Rupert Freeman, Markus Brill, and Vincent Conitzer. *On the Axiomatic Characterization of Runoff Voting Rules*. In Proceedings of the Twenty-Eighth AAAI Conference on Artificial Intelligence (AAAI-14), Quebec City, Canada, 2014.

## WORKING PAPERS

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Rupert Freeman, David M. Pennock, Dominik Peters, and Jennifer Wortman Vaughan. *Truthful Aggregation of Budget Proposals*. Revise and resubmit at Journal of Economic Theory. (Supersedes the EC-19 paper above)

Rupert Freeman, Nisarg Shah, and Rohit Vaish. *Best of Both Worlds: Ex-ante and Ex-Post Fairness in Resource Allocation*. In submission to Operations Research. (Supersedes the EC-19 paper above)

## INVITED TALKS

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*Truthful Aggregation of Budget Proposals*

Duke University, CS-Econ Seminar

May 2019

Stanford University, Research on Algorithms and Incentives in Networks Seminar

October 2019

UC Santa Cruz, AI for Social Good Guest Lecture

October 2019

*Wagering Mechanisms: From Fair Division to No-Regret Learning*

Rensselaer Polytechnic Institute, CS Colloquium

October 2018

Yale University, CS/Econ Seminar

December 2019

*An Equivalence Between Wagering and Fair-Division Mechanisms*

Harvard University, EconCS Seminar

September 2018

2019 INFORMS Annual Meeting

October 2019

### *Algorithmic Shared Ownership*

Illinois Institute of Technology, CS Colloquium

UC Santa Barbara, CS Colloquium

Microsoft Research NYC

February 2018

January 2018

January 2018

## TEACHING

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### **Tutorial Presentations**

*Recent Advances in Fair Resource Allocation*

ACM Conference on Economics and Computation (EC)

June 2019

AAAI Conference on Artificial Intelligence

February 2020

International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS)

May 2020

### **Teaching Assistantships**

Duke University: Crowdsourcing Societal Tradeoffs

Spring 2015

Duke University: Discrete Mathematics for Computer Science

Spring, Fall 2014

## SERVICE

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**Program Committee:** AAAI (2018, 2019, 2020), IJCAI (2018 [two-star distinguished reviewer, among top 2%], 2019, 2020), EC (2019), AISTATS (2018)

**Journal Reviewing:** Social Choice and Welfare (2014), Journal of Artificial Intelligence Research (2016, 2018, 2019), Artificial Intelligence Journal (2017), Discrete Optimization (2018), Journal of Autonomous Agents and Multi-Agent Systems (2019, 2020)

**Other Conference Reviewing:** SODA (2018, 2020), WINE (2017, 2019), AIES (2019), SAGT (2017), MFCS (2017), EC (2017)