

# John P Dickerson

## Curriculum Vitae

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### Notarization

I have read the following and certify that this curriculum vitae is a current and accurate statement of my professional record.

Signature:



Date: 18 August 2019

UID: 107768605

## Personal Information

### Academic Experience

2016–	U. of Maryland	Assistant Professor, Department of Computer Science
	<i>Joint Appointment</i>	Institute for Advanced Computer Studies (UMIACS)
	<i>Affiliation</i>	Applied Math/Stats and Scientific Computation (AMSC)
	<i>Affiliation</i>	Human-Computer Interaction Lab (HCIL)
2010–16	CMU	Graduate Research Assistant, Electronic Marketplaces Lab

### Education

2016	Ph.D.	Carnegie Mellon University	Computer Science
2014	M.Sc.	Carnegie Mellon University	Computer Science
2008	B.Sc.	University of Maryland	Computer Science
2008	B.Sc.	University of Maryland	Mathematics

### Industry & Non-Profit Experience

2018–	Facebook	Research Scientist (via PRO Unlimited)
2018–	Public Spend Forum	Advisor
2018–	Zenful	Advisor
2012–	Optimized Markets	Algorithms & optimization consultant
2010–17	OPTN/UNOS	Algorithms consultant for US national kidney exchange
2008–12	U. of Maryland	Researcher, Lab for Computational Cultural Dynamics
2005	IBM	Global Contract Preparation System (GCPS)
2003–04	US Dept of Defense	Bioinformatics and security R&D

## Research, Scholarly, Creative and/or Professional Activities

### Books

1. Subrahmanian, V, A Mannes, A Sliva, J Shakarian, and JP Dickerson (2012). *Computational Analysis of Terrorist Groups: Lashkar-e-Taiba*. New York: Springer. ISBN: 978-1-4614-4768-9.

### Book chapters

1. Dickerson, JP, GI Simari, and V Subrahmanian (2013). "Using Temporal Probabilistic Rules to Learn Group Behavior". In: *Handbook of Computational Approaches to Counterterrorism*. Ed. by V Subrahmanian. Springer New York.
2. Simari, GI, JP Dickerson, A Sliva, and V Subrahmanian (2013). "Policy Analytics Generation using Action Probabilistic Logic Programs". In: *Handbook of Computational Approaches to Counterterrorism*. Ed. by V Subrahmanian. Springer New York.
3. Shakarian, P, JP Dickerson, and V Subrahmanian (2012). "Geospatial Abduction with Adaptive Adversaries". In: *Geospatial Abduction: Principles and Practice*. Ed. by P Shakarian and V Subrahmanian. Springer. Chap. 4.

## Journal papers

1. Blum, A, JP Dickerson, N Haghtalab, AD Procaccia, T Sandholm, and A Sharma (2019). Ignorance is Almost Bliss: Near-Optimal Stochastic Matching With Few Queries. *Operations Research*. To appear.
2. Dickerson, JP, AD Procaccia, and T Sandholm (2018). Failure-Aware Kidney Exchange. *Management Science* **65**(4), 1768–1791.
3. Doebel, S, JP Dickerson, JD Hoover, and Y Munakata (2018). Using language to get ready: Familiar labels help children to engage proactive control. *Journal of Experimental Child Psychology* **166**, 147–159.
4. Dickerson, JP and T Sandholm (2017). Multi-Organ Exchange. *Journal of Artificial Intelligence Research (JAIR)* **60**, 639–679.
5. Erickson, LC, ED Thiessen, KE Godwin, JP Dickerson, and AV Fisher (2015). Endogenously- and Exogenously-driven Selective Sustained Attention: Contributions to Learning in Kindergarten Children. *Journal of Experimental Child Psychology* **138**, 126–134.
6. Sawant, A, JP Dickerson, MT Hajiaghayi, and V Subrahmanian (2015). Automated Generation of Counter-Terrorism Policies using Multi-Expert Input. *ACM Transactions on Intelligent Systems and Technology (TIST)* **6**(4), 44:1–44:27.
7. Fisher, A, E Thiessen, K Godwin, H Kloos, and JP Dickerson (2013). Assessing selective sustained attention in 3- to 5-year-old children: Evidence from a new paradigm. *Journal of Experimental Child Psychology* **114**(2), 275–294.
8. Simari, GI, JP Dickerson, A Sliva, and V Subrahmanian (2013). Parallel Abductive Query Answering in Probabilistic Logic Programs. *ACM Transactions on Computational Logic (TOCL)* **14**(2), 12:1–12:39.
9. Patro, R, JP Dickerson, S Bista, SK Gupta, and A Varshney (2012). Speeding Up Particle Trajectory Simulations under Moving Force Fields using GPUs. *ASME Journal of Computing and Information Science in Engineering (JCISE)* **12**(2), 021006:1–021006:8.
10. Shakarian, P, JP Dickerson, and V Subrahmanian (2012). Adversarial Geospatial Abduction Problems. *ACM Transactions on Intelligent Systems and Technology (TIST)* **3**(2), 34:1–34:35.
11. Subrahmanian, V and JP Dickerson (2009). What Can Virtual Worlds and Games Do for National Security? *Science* **326**(5957), 1201–1202.

## Highly-refereed conference papers

*Conferences are the primary publication venue in Computer Science, with competitive acceptance rates of 15–30%. This section contains papers published in highly-selective, “top-tier” conference proceedings.*

1. Dickerson, JP, KA Sankararaman, K Sarpatwar, A Srinivasan, KL Wu, and P Xu (2019). Online Resource Allocation with Matching Constraints. In: *International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS)*.
2. Dickerson, JP, KA Sankararaman, A Srinivasan, and P Xu (2019). Balancing Relevance and Diversity in Online Bipartite Matching via Submodularity. In: *Conference on Artificial Intelligence (AAAI)*.
3. McElfresh, D, H Bidkhori, and JP Dickerson (2019). Scalable Robust Kidney Exchange. In: *Conference on Artificial Intelligence (AAAI)*.
4. Schumann, C, SN Counts, J Foster, and JP Dickerson (2019). The Diverse Cohort Selection Problem. In: *International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS)*.
5. Schumann, C, Z Lang, J Foster, and JP Dickerson (2019). Making the Cut: A Bandit-based Approach to Tiered Interviewing. In: *Conference on Neural Information Processing Systems (NeurIPS)*.
6. Shafahi, A, MA Ghiasi, M Najibi, F Huang, JP Dickerson, and T Goldstein (2019). Logit-Similarity: Defending, Understanding, and Generalizing Logit-Squeezing. In: *British Machine Vision Conference (BMVC)*.
7. Shafahi, A, M Najibi, MA Ghiasi, Z Xu, JP Dickerson, C Studer, LS Davis, G Taylor, and T Goldstein (2019). Adversarial Training for Free! In: *Conference on Neural Information Processing Systems (NeurIPS)*.
8. Xu, P, Y Shi, H Cheng, JP Dickerson, KA Sankararaman, A Srinivasan, Y Tong, and L Tsepenekas (2019). A Unified Approach to Online Matching with Conflict-Aware Constraints. In: *Conference on Artificial Intelligence (AAAI)*.
9. Dickerson, JP, KA Sankararaman, A Srinivasan, and P Xu (2018). Allocation Problems in Ride-Sharing Platforms: Online Matching with Offline Reusable Resources. In: *Conference on Artificial Intelligence (AAAI)*.
10. Dickerson, JP, KA Sankararaman, A Srinivasan, and P Xu (2018). Assigning Tasks to Workers based on Historical Data: Online Matching with Two-sided Arrivals. In: *International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS)*.

11. Freedman, R, J Schaich Borg, W Sinnott-Armstrong, JP Dickerson, and V Conitzer (2018). Adapting a Kidney Exchange Algorithm to Align with Human Values. In: *Conference on Artificial Intelligence (AAAI)*. **Outstanding Student Paper Honorable Mention.**
12. Li, Z, N Gupta, S Das, and JP Dickerson (2018). Equilibrium Behavior in Competing Dynamic Matching Markets. In: *International Joint Conference on Artificial Intelligence (IJCAI)*.
13. McElfresh, D and JP Dickerson (2018). Balancing Lexicographic Fairness and a Utilitarian Objective with Application to Kidney Exchange. In: *Conference on Artificial Intelligence (AAAI)*.
14. Redmiles, EM, M Mazurek, and JP Dickerson (2018). Dancing Pigs or Externalities? Measuring the Rationality of Security Decisions. In: *Conference on Economics and Computation (EC)*.
15. Ahmed, F, JP Dickerson, and M Fuge (2017). Diverse Weighted Bipartite b-Matching. In: *International Joint Conference on Artificial Intelligence (IJCAI)*.
16. Dickerson, JP, AM Kazachkov, AD Procaccia, and T Sandholm (2017). Small Representations of Big Kidney Exchange Graphs. In: *Conference on Artificial Intelligence (AAAI)*.
17. Farina, G, JP Dickerson, and T Sandholm (2017). Operation Frames and Clubs in Kidney Exchange. In: *International Joint Conference on Artificial Intelligence (IJCAI)*.
18. Dickerson, JP, D Manlove, B Plaut, T Sandholm, and J Trimble (2016). Position-Indexed Formulations for Kidney Exchange. In: *Conference on Economics and Computation (EC)*.
19. Plaut, B, JP Dickerson, and T Sandholm (2016). Fast Optimal Clearing of Capped-Chain Barter Exchanges. In: *Conference on Artificial Intelligence (AAAI)*.
20. Blum, A, JP Dickerson, N Haghtalab, AD Procaccia, T Sandholm, and A Sharma (2015). Ignorance is Almost Bliss: Near-Optimal Stochastic Matching With Few Queries. In: *Conference on Economics and Computation (EC)*.
21. Das, S, JP Dickerson, Z Li, and T Sandholm (2015). Competing Dynamic Matching Markets. In: *Conference on Auctions, Market Mechanisms, and Their Applications (AMMA)*.
22. Dickerson, JP and T Sandholm (2015). FutureMatch: Combining Human Value Judgments and Machine Learning to Match in Dynamic Environments. In: *Conference on Artificial Intelligence (AAAI)*.
23. Hajaj, C, JP Dickerson, A Hassidim, T Sandholm, and D Sarne (2015). Strategy-Proof and Efficient Kidney Exchange Using a Credit Mechanism. In: *Conference on Artificial Intelligence (AAAI)*.
24. Dickerson, JP, J Goldman, J Karp, AD Procaccia, and T Sandholm (2014). The Computational Rise and Fall of Fairness. In: *Conference on Artificial Intelligence (AAAI)*.
25. Dickerson, JP, V Kagan, and V Subrahmanian (2014). Using Sentiment to Detect Bots on Twitter: Are Humans more Opinionated than Bots? In: *International Conference on Advances in Social Networks Analysis and Mining (ASONAM)*.
26. Dickerson, JP, AD Procaccia, and T Sandholm (2014). Price of Fairness in Kidney Exchange. In: *International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS)*.
27. Dickerson, JP and T Sandholm (2014). Multi-Organ Exchange: The Whole is Greater than the Sum of its Parts. In: *Conference on Artificial Intelligence (AAAI)*.
28. Erickson, LC, ED Thiessen, KE Godwin, JP Dickerson, and AV Fisher (2014). Endogenously- but not Exogenously-driven Selective Sustained Attention is Related to Learning in a Classroom-like Setting in Kindergarten Children. In: *Conference of the Cognitive Science Society (CogSci)*.
29. Dickerson, JP, AD Procaccia, and T Sandholm (2013). Failure-Aware Kidney Exchange. In: *Conference on Economics and Computation (EC)*.
30. Dickerson, JP and T Sandholm (2013). Throwing darts: Random sampling helps tree search when the number of short certificates is moderate. In: *Conference on Artificial Intelligence (AAAI)*. Late-breaking paper.
31. Dickerson, JP, A Sawant, M Hajiaghayi, and V Subrahmanian (2013). PREVE: A Policy Recommendation Engine based on Vector Equilibria Applied to Reducing LeT's Attacks. In: *International Conference on Advances in Social Networks Analysis and Mining (ASONAM)*.
32. Dickerson, JP, AD Procaccia, and T Sandholm (2012). Dynamic Matching via Weighted Myopia with Application to Kidney Exchange. In: *Conference on Artificial Intelligence (AAAI)*.
33. Dickerson, JP, AD Procaccia, and T Sandholm (2012). Optimizing Kidney Exchange with Transplant Chains: Theory and Reality. In: *International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS)*.
34. Dickerson, JP, GI Simari, V Subrahmanian, and S Kraus (2010). A Graph-Theoretic Approach to Protect Static and Moving Targets from Adversaries. In: *International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS)*.

35. Simari, GI, JP Dickerson, and V Subrahmanian (2010). Cost-based Query Answering in Action Probabilistic Logic Programs. In: *International Conference on Scalable Uncertainty Management (SUM)*.

### Workshop and smaller conference papers

Often, preliminary work is presented at workshops without formal proceedings or smaller conferences before appearing as a full paper in a selective conference. This section lists early-stage work that appeared in workshops and smaller conferences with light peer review.

1. Curry, MJ, DC McElfresh, X You, C Moy, F Huang, T Goldstein, and JP Dickerson (2019). Reinforcement Learning for Dynamic Set Packing. In: *Conference on Reinforcement Learning and Decision Making (RLDM)*.
2. McElfresh, DC, C Kroer, S Pupyrev, E Sodomka, and JP Dickerson (2019). Matching Algorithms for Blood Donation. In: *Mechanism Design for Social Good (MD4SG-19)*.
3. McElfresh, DC, C Kroer, S Pupyrev, E Sodomka, and JP Dickerson (2019). Matching Algorithms for Blood Donation. In: *AI for Social Good Workshop at IJCAI-19*.
4. Cui, G, JP Dickerson, N Durvasula, W Gasarch, E Metz, J Prinz, N Raman, D Smolyak, and SH Yoo (2018). A Muffin-Theorem Generator. In: *International Conference on Fun with Algorithms (FUN)*. Working paper. Full version available as “The Muffin Problem” at arXiv:abs/1709.02452.
5. McElfresh, D and JP Dickerson (2018). Balancing Lexicographic Fairness and a Utilitarian Objective with Application to Kidney Exchange. In: *2018 Workshop on Health Intelligence (W3PHIAI) at AAAI-18*.
6. Dickerson, JP, AM Kazachkov, AD Procaccia, and T Sandholm (2017). Small Representations of Big Kidney Exchange Graphs. In: *Workshop on AI and OR for Social Good (AIORSocGood) at AAAI-17*.
7. Farina, G, JP Dickerson, and T Sandholm (2017). Inter-Club Kidney Exchange. In: *Workshop on AI and OR for Social Good (AIORSocGood) at AAAI-17*.
8. Farina, G, JP Dickerson, and T Sandholm (2017). Multiple Willing Donors and Organ Clubs in Kidney Exchange. In: *Algorithmic Game Theory (AGT) workshop at IJCAI-17*.
9. Schumann, C, SN Counts, J Foster, and JP Dickerson (2017). The Diverse Cohort Selection Problem: Multi-Armed Bandits with Varied Pulls. In: *Aligned AI Workshop at NIPS-17*.
10. Schumann, C, SN Counts, J Foster, and JP Dickerson (2017). The Diverse Cohort Selection Problem: Multi-Armed Bandits with Varied Pulls. In: *Women in Machine Learning (WiML) Workshop at NIPS-17*.
11. Dickerson, JP, AM Kazachkov, AD Procaccia, and T Sandholm (2016). Small Representations of Big Kidney Exchange Graphs. In: *Exploring Beyond the Worst Case in Computational Social Choice (EXPLORE) workshop at AAMAS-2016*. **Most Visionary Paper**.
12. Dickerson, JP and T Sandholm (2015). Uncertainty in Dynamic Matching with Application to Organ Exchange. In: *Machine Learning for Healthcare (MLHC) workshop at NIPS-2015*.
13. Banaszak, S, E Bowman, JP Dickerson, and V Subrahmanian (2014). Forecasting Country Stability in North Africa. In: *Joint Intelligence & Security Informatics Conference (JISIC)*.
14. Dickerson, JP (2014). Robust Dynamic Optimization with Application to Kidney Exchange. In: *Doctoral Consortium at AAMAS-2014*.
15. Dickerson, JP, J Goldman, J Karp, AD Procaccia, and T Sandholm (2014). The Computational Rise and Fall of Fairness. In: *Exploring Beyond the Worst Case in Computational Social Choice (EXPLORE) workshop at AAMAS-2014*.
16. Dickerson, JP, AD Procaccia, and T Sandholm (2014). Empirical Price of Fairness in Failure-Aware Kidney Exchange. In: *Towards Better and more Affordable Healthcare: Incentives, Game Theory, and Artificial Intelligence (HCAGT) workshop at AAMAS-2014*.
17. Dickerson, JP and T Sandholm (2014). Balancing Efficiency and Fairness in Dynamic Kidney Exchange. In: *Modern Artificial Intelligence for Health Analytics (MAIHA) workshop at AAAI-2014*.
18. Dickerson, JP and T Sandholm (2013). Liver and Multi-Organ Exchange. In: *IJCAI-2013 Workshop on Constraint Reasoning, Planning and Scheduling Problems for a Sustainable Future (COPLAS)*.
19. Dickerson, JP and T Sandholm (2013). Throwing darts: Random sampling helps tree search when the number of short certificates is moderate. In: *International Symposium on Combinatorial Search (SoCS)*.
20. Dickerson, JP, A Mannes, and V Subrahmanian (2011). Dealing with Lashkar-e-Taiba: A Multi-Player Game-Theoretic Perspective. In: *International Symposium on Open Source Intelligence and Web Mining*.
21. Dickerson, JP, MV Martinez, D Reforgiato, and V Subrahmanian (2008). CIG: Cultural Islands and Games. In: *International Conference on Computational Cultural Dynamics*.

## Refereed and invited tutorials

1. Das, S, JP Dickerson, and B Wilder (2019). *Optimization & Learning Approaches to Resource Allocation for Social Good*. Half-day tutorial at the International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS).
2. Dickerson, JP (2019). *Some Thoughts on Ethical Issues in Kidney Exchange*. Tutorial at a joint session between the Workshop of the European Network for Collaboration in Kidney Exchange Programmes (ENCKEP) and Conference on Economic Design (CED).
3. Dickerson, JP (2018). *Ethical Market Design via Optimization*. Three 1.5-hour lectures at the Cornell, Maryland, Max Planck Pre-doctoral Research School (CMMRS) 2018.
4. Dickerson, JP and T Sandholm (2016). *Organ Exchange: A Success Story of AI in Healthcare*. Half-day tutorial at the Conference on Artificial Intelligence (AAAI).
5. Dickerson, JP and T Sandholm (2016). *Organ Exchange: A Success Story of AI in Healthcare*. Half-day tutorial at the International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS).
6. Dickerson, JP and T Sandholm (2016). *Organ Exchange: A Success Story of AI in Healthcare*. Half-day tutorial at the International Joint Conference on Artificial Intelligence (IJCAI).

## Invited talks

1. Dickerson, JP (2019). *Diversity in Matching Markets*. Invited talk, National Science Foundation (NSF), AI Tea.
2. Dickerson, JP (2019). *Increasing Access to Organs through Market Design and Optimization*. Invited talk, University of Glasgow.
3. Dickerson, JP and A Srinivasan (2019). *Balancing Relevance & Diversity in Online Matching*. Invited talk, 5th Google Market Algorithms Workshop (Mountain View).
4. Dickerson, JP (2018). *Diversity in Matching Markets*. Invited talk, IBM Watson (Reasoning PIC / AI Science Reasoning Group).
5. Dickerson, JP (2018). *Diversity in Matching Markets*. Invited talk, Facebook (Core Data Sciences).
6. Dickerson, JP (2018). *Diversity in Matching Markets*. Invited talk, Carnegie Mellon University (CMU).
7. Dickerson, JP (2018). *Increasing Access to Organs through Market Design and Optimization*. Invited talk, Facebook (Core Data Sciences).
8. Dickerson, JP (2018). *Introduction to Algorithms, Artificial Intelligence, and Predictive Analytics*. Invited talk, FTC Hearings on Competition and Consumer Protection in the 21st Century.
9. Dickerson, JP (2018). *Using Optimization to Balance Fairness and Efficiency in Kidney Exchange*. Invited talk, American University.
10. Dickerson, JP (2018). *Using Optimization to Balance Fairness and Efficiency in Kidney Exchange*. Invited talk, Dartmouth College.
11. Dickerson, JP and A Srinivasan (2018). *Better Allocation and Matching via Optimization and Machine Learning*. Invited talk, Google (Mountain View).
12. Dickerson, JP (2017). *Better Matching Markets Through Optimization*. Invited talk, United States Naval Academy (USNA).
13. Dickerson, JP (2017). *Better Matching Markets Through Optimization*. Invited talk, Laboratory for Telecommunication Sciences (LTS).
14. Dickerson, JP (2017). *Better Matching Markets Through Optimization*. Invited talk, Stanford University.
15. Dickerson, JP (2017). *Better Matching Markets Through Optimization*. Invited talk, University of British Columbia.
16. Dickerson, JP (2016). *Better Matching Markets Through Optimization*. Invited talk, Duke University.
17. Dickerson, JP (2016). *Swapping Kidneys: Better Matching Market Design via Optimization*. Invited talk, Data Science DC.
18. Dickerson, JP (2013). *Failure-Aware Kidney Exchange*. Tsinghua University, Beijing, China.

## Other publications and presentations

1. McElfresh, DC, P Vayanos, and JP Dickerson (2019). Robust Active Preference Elicitation for Learning Policy Priorities. In: *INFORMS Revenue Management & Pricing Workshop (oral presentation given by my student Duncan McElfresh)*.



2. Redmiles, EM, JP Dickerson, KP Gummadi, and M Mazurek (2018). Equitable Security: Optimizing Distribution of Nudges and Resources. In: *ACM Conference on Computer and Communications Security (CCS)*. Abstract of poster.
3. Redmiles, EM, M Mazurek, and JP Dickerson (2018). Do Users Make Rational Security Decisions? In: *Network and Distributed System Security Symposium (NDSS)*. Abstract of poster, **Best Poster Honorable Mention**.
4. Dickerson, JP (2017). Recent Advances in Optimization and Machine Learning for Kidney Exchange. In: *INFORMS Healthcare Conference*. Invited talk.
5. Sandholm, T, G Farina, JP Dickerson, R Leishman, D Stewart, R Formica, C Thiessen, and S Kulkarni (2017). A Novel KPD Mechanism to Increase Transplants When Some Candidates Have Multiple Willing Donors. In: *American Transplant Congress (ATC)*. Abstract of poster.
6. Dickerson, JP (2016). Fast Optimal Clearing of Capped-Chain Barter Exchanges. In: *INFORMS Optimization Society (IOS) Conference*.
7. Dickerson, JP (2016). FutureMatch: Combining Human Value Judgments and Machine Learning to Match in Dynamic Environments. In: *World Congress on Game Theory (GAMES)*.
8. Dickerson, JP (2016). Small Representations of Big Kidney Exchange Graphs. In: *INFORMS Annual Conference*. Invited talk, Healthcare Applications Society cluster.
9. Dickerson, JP (2016). Small Representations of Big Kidney Exchange Graphs. In: *28th European Conference on Operational Research (EURO)*. Invited talk, Healthcare Logistics stream.
10. Dickerson, JP (2016). Toward a Credit-Based Mechanism for Dynamic Kidney Exchange. In: *INFORMS Annual Conference*. Invited talk, Auctions cluster.
11. Dickerson, JP (2016). Uncertainty in Dynamic Matching with Application to Organ Exchange. In: *INFORMS Annual Conference*. Invited talk.
12. Dickerson, JP, D Manlove, B Plaut, T Sandholm, and J Trimble (2016). Position-Indexed Formulations for Kidney Exchange. In: *INFORMS Annual Conference*. Invited talk, Healthcare Applications Society cluster.
13. Das, S, JP Dickerson, Z Li, and T Sandholm (2015). Competing Dynamic Matching Markets. In: *INFORMS Annual Conference*. Invited talk, Auctions cluster.
14. Das, S, JP Dickerson, Z Li, and T Sandholm (2015). Competing Dynamic Matching Markets. In: *Conference on Economics and Computation (EC)*. Abstract of poster.
15. Dickerson, JP (2015). Combining Human Value Judgments and Machine Learning to Match in Dynamic Environments. In: *International Symposium on Mathematical Programming (ISMP)*. Invited talk, Life Sciences and Healthcare cluster.
16. Dickerson, JP (2015). Combining Human Value Judgments and Machine Learning to Match in Dynamic Environments. In: *INFORMS Healthcare Conference*. Invited talk, Health Operations & Logistics cluster.
17. Dickerson, JP (2015). Near-optimal Stochastic Matching With Few Queries. In: *INFORMS Annual Conference*. Invited talk, Auctions cluster.
18. Dickerson, JP (2015). The Dynamics of Kidney Exchange. In: *Production and Operations Management Society (POMS) Annual Conference*. Invited talk, Healthcare Operations Management track.
19. Erickson, LC, K Godwin, JP Dickerson, ED Thiessen, and AV Fisher (2015). Different mechanisms for regulating sustained attention and learning in children. In: *Biennial Meeting of the Society for Research in Child Development (SRCD)*.
20. Dickerson, JP (2014). *FutureMatch: Combining Human Value Judgments and Machine Learning to Match in Dynamic Environments*. DB Seminar, Carnegie Mellon University, Pittsburgh, PA.
21. Dickerson, JP, AD Procaccia, and T Sandholm (2014). Price of Fairness in Kidney Exchange. In: *World Transplant Congress (WTC)*. Abstract of poster.
22. Dickerson, JP and T Sandholm (2014). FutureMatch: Combining Human Value Judgments and Machine Learning to Match in Dynamic Environments. In: *INFORMS Annual Conference*. Invited talk, Auctions cluster.
23. Dickerson, JP and T Sandholm (2014). FutureMatch: Learning to Match in Dynamic Environments. In: *World Transplant Congress (WTC)*. Abstract of poster.
24. Dickerson, JP and T Sandholm (2014). FutureMatch: Learning to Match in Dynamic Environments. In: *Conference on Economics and Computation (EC)*. Abstract of poster.
25. Dickerson, JP and T Sandholm (2014). Toward Multi-Organ Exchange. In: *World Transplant Congress (WTC)*. Abstract of poster.

26. Dickerson, JP, AD Procaccia, and T Sandholm (2013). Failure-Aware Kidney Exchange. In: *INFORMS Annual Conference*. Invited talk, Auctions cluster.
27. Dickerson, JP, AD Procaccia, and T Sandholm (2013). Optimizing Kidney Exchange with Transplant Chains: Theory and Reality. In: *American Transplant Congress (ATC)*. Abstract of poster.
28. Dickerson, JP, AD Procaccia, and T Sandholm (2013). Results About, and Algorithms For, Robust Probabilistic Kidney Exchange Matching. In: *American Transplant Congress (ATC)*. Abstract of poster.
29. Dickerson, JP and T Sandholm (2013). Liver and Multi-Organ Exchange. In: *INFORMS Annual Conference*. Contributed presentations.
30. Dickerson, JP and T Sandholm (2013). Liver and Multi-Organ Exchange. In: *American Transplant Congress (ATC)*. Abstract of poster.
31. Fisher, AV, ED Thiessen, JP Dickerson, and LC Erickson (2013). Development of Selective Sustained Attention: Conceptual and Measurement Issues. In: *Biennial Meeting of the Cognitive Development Society (CDS)*.
32. Dickerson, JP, AD Procaccia, and T Sandholm (2012). Dynamic Matching via Weighted Myopia with Application to Kidney Exchange. In: *INFORMS Annual Conference*. Invited talk, Computational Stochastic Optimization cluster.
33. Dickerson, JP, AD Procaccia, and T Sandholm (2012). Optimizing Kidney Exchange with Transplant Chains: Theory and Reality. In: *INFORMS Annual Conference*. Invited talk, Market Mechanisms and their Applications session.
34. Thiessen, ED, JP Dickerson, LC Erickson, and AV Fisher (2012). Eyes as the windows of cognition: The Track-It paradigm and selective attention. In: *SRCD Themed Meeting on Developmental Methodology*.
35. Vargas-Baron, E, JP Dickerson, and V Subrahmanian (2009). *Country Profiles on Early Childhood Development: Sub-Saharan Africa*. Booklet for the 4th International Conference on Early Childhood Development.
36. Blusewicz, K, K de Souza, JP Dickerson, B Feldman, A Gaddam, G Ganesan, C Hatch, C Hilseberg, L Kawa, K LaCurts, K Nealon, C Yu, and J Zytnick (2008). *Classification of Perceived Emotion in Music using a Computational Model of the Auditory Cortex*. University of Maryland Gemstone Interdisciplinary Research Program Thesis.

### Sponsored Research and Programs (Administered by ORA)

Values given below are best estimates; “UMD CS” refers to the dollar amount awarded to my department, while “Total” is an estimate of the total value of the award. Fellowships awarded directly to other researchers in my group are listed elsewhere, under “Advising & Mentorship.”

Year(s)	Description	UMD CS	Total
2019–23	NSF CAREER Award IIS-1846237: <i>CAREER: Scalable and Robust Dynamic Matching Market Design</i> . Sole PI: Dickerson.	\$550,000	\$550,000
2019–21	DARPA Disruptioneering Award (SI3-CMD) #S4761: <i>Decision Making via Hierarchy of Network Games: Algorithms, Game Theory, Artificial Intelligence, and Learning</i> . PI: Erik Demaine (MIT CS), co-PIs: Fotini Christia (MIT Political Science), Constantinos Daskalakis (MIT CS), Dickerson, Mohammad-Taghi HajiAghayi (UMD CS).	\$400,000	\$1,000,000
2019-21	NSF Award CCF-1852352: <i>REU Site: CAAR: Combinatorics and Algorithms Applied to Real Problems</i> . PI: Bill Gasarch (UMD CS), co-PI: Dickerson (transfer in progress from Samir Khuller).	\$360,000	\$360,000
2018-22	NIH R01 Award NLM-013039-01: <i>HealthyMe/MiSalud Smartphone Application: Identifying Mechanisms to Engage African Americans and Hispanics in Personal Health Libraries</i> . PI: Cynthia Baur (UMD Public Health), co-PIs: Robert S. Gold (UMD Public Health), Neil Sehgal (UMD Public Health).	\$133,146	\$1,300,000
2018	NSF Award CNS-1838985: <i>Student Travel to the Cornell, Maryland, Max Planck Pre-doctoral Research School</i> . PI: Bobby Bhattacharjee (UMD CS), co-PI: Dickerson.	Travel grant	\$49,996

2016–18	Israeli Ministry of Defense Award #4440766810: <i>Functional Targeting of Terror Networks: A Big Data Approach</i> . PI transfer from V.S. Subrahmanian (Dartmouth CS).	\$9,000	\$150,000
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### Gifts and Funded Research (Not Administered by ORA)

Year(s)	Description	UMD CS	Total
2019	Google Faculty Research Award: <i>AI for Efficient and Equitable Organ Allocation Policies</i> . PI: Dickerson, Co-PI: Aravind Srinivasan (UMD CS).	\$56,639	\$56,639
2019	Google Gift: <i>Dynamic and Scalable Matching, Query Markets, and Allocation under Complex Objective Functions</i> . PIs: Dickerson, Aravind Srinivasan (UMD CS).	\$75,000	\$75,000
2019	Google Cloud Credits Gift: PIs: Dickerson, Aravind Srinivasan (UMD CS).	\$7,500	\$7,500
2019	Maryland Transportation Institute Seed Grant, PI: Dickerson, Co-PIs: Aravind Srinivasan (UMD CS), Ilya Ryzhov (UMD Business).	\$41,000	\$50,000
2018	Smith AI in Business and Society Seed Grant, PIs: Dickerson, Ilya Ryzhov (UMD Business), Aravind Srinivasan (UMD CS).	\$17,500	\$20,000
2014	NSF SBIR Phase I Award #1345567. PI transfer from Thomas Sandholm (CMU & Optimized Markets). I served as PI at Optimized Markets, Inc., for the duration of the award.	<i>Awarded to Optimized Markets</i>	\$150,000

### Patents

1. Sandholm, T, F Peng, and JP Dickerson (2018). “Automated Allocation Of Media Campaign Assets To Time And Program In Digital Media Delivery Systems”. US Patent #10,097,904. Continuation application filed 6/27/2017.
2. Sandholm, T, F Peng, and JP Dickerson (2017). “Automated Allocation Of Media Campaign Assets To Time And Program In Digital Media Delivery Systems”. US Patent #9,699,502.

### Research Fellowships, Prizes, & Awards

2019	Google Faculty Research Award
2019	National Science Foundation CAREER Award
2018	Outstanding Student Paper Honorable Mention, AAAI 2018.
2015–17	Facebook Fellowship
2015–16	Siebel Scholarship
2014	FutureMatch, our framework for dynamic matching, won HPCWire’s “Best Data-Intensive Application” award (joint with Pittsburgh Supercomputing Center)
2012–15	NDSEG Fellowship

## Teaching, Mentoring, & Advising

### Courses Taught

Courses where I am lead instructor (that is, the person who designs lectures, teaches lectures, designs assignments, manages teaching assistants, assigns final grades, handles all administrative overhead, and so on):

Semester	University	Course Code	Title	Co-Instructor(s)	Size
F2019	UMD	CMSC320	Introduction to Data Science	–	298
F2018	UMD	CMSC641	Principles of Data Science	–	13
F2018	UMD	CMSC320	Introduction to Data Science	<i>Saggar</i>	222
S2018	UMD	CMSC828M	Applied Mechanism Design for Social Good	–	34
F2017	UMD	CMSC320	Introduction to Data Science	<i>Deshpande</i>	185
S2017	UMD	CMSC320	Introduction to Data Science	–	82



F2016	UMD	CMSC828M	Applied Mechanism Design for Social Good	–	22
F2015	CMU	15-892	Foundations of Electronic Marketplaces	<i>Sandholm</i>	12

Courses where I am an “instructor of record” but only lightly advise the “real” instructors, who are typically junior and senior undergraduate students operating via the Student Initiated Courses (STICs) program at UMD:

Semester	University	Course Code	Title	My Position	Size
F2019	UMD	CMSC389K	Full-Stack Web Development with Node.js	Faculty Mentor	60
S2019	UMD	CMSC389K	Full-Stack Web Development with Node.js	Faculty Mentor	59
F2018	UMD	CMSC389K	Full-Stack Web Development with Node.js	Faculty Mentor	28
S2018	UMD	CMSC389K	Full-Stack Web Development with Node.js	Faculty Mentor	28
F2017	UMD	CMSC389K	Full-Stack Web Development with Node.js	Faculty Mentor	26

Courses where I formally advise an undergraduate student on directed research:

Semester	University	Course Code	Title	My Position	Size
S2019	UMD	CMSC499A	Research with Professorial Faculty	Advisor	2
F2018	UMD	CMSC499A	Research with Professorial Faculty	Advisor	3
F2018	UMD	CMSC498A	Independent Study	Advisor	1
S2018	UMD	CMSC499A	Research with Professorial Faculty	Advisor	1
F2017	UMD	CMSC499A	Research with Professorial Faculty	Advisor	2
S2017	UMD	CMSC499A	Research with Professorial Faculty	Advisor	4
F2016	UMD	CMSC499A	Research with Professorial Faculty	Advisor	1

## Advising & Mentorship

### Ph.D. Students

Student	University	Year(s)	Details
Aviva Prins	UMD	2019–	Computer Science ( <i>incoming August 2019</i> )
Vedant Nanda	UMD	2019–	Computer Science ( <i>incoming August 2019</i> ). Co-advised with Krishna Gummadi (MPI-SWS)
Michael Curry	UMD	2018–	Computer Science. Co-advised with Tom Goldstein
Neal Gupta	UMD	2017–	Computer Science
Duncan McElfresh	UMD	2017–	Mathematics
Candice Schumann	UMD	2017–	Computer Science
Pan Xu	UMD	2016–19	Computer Science. Co-advised with Aravind Srinivasan

### Undergraduate Students

Student	University	Year(s)	Project	Next Position
Charles Cui	Oberlin	2019–	<i>Summer REU</i> , active learning in healthcare	
Kendra Griesman	Haverford	2019–	<i>Summer REU</i> , active learning in healthcare	
Wei Qin Wang	Penn State	2019–	<i>Summer REU</i> , active learning in healthcare	
Tyler Will	Michigan State	2019–	<i>Summer REU</i> , active learning in healthcare	
Darshan Chakrabarti	CMU	2018–	<i>Summer REU</i> , learning diversity functions, fairness in clustering	Strategic Machines
Mark “Kweku” Kwegyir-Aggrey	UMD	2018–	Rideshare market optimization	Brown University (PhD)
Yuhao Wan	Carleton	2018–	<i>Summer REU</i> , learning diversity functions, rideshare market optimization	University of Washington (PhD)

Joseph “J.T.” Bergman	UMD	2017–19	Deep learning for Korean character recognition	MicroStrategy
Samsara Counts	GWU	2017–19	<i>Summer REU</i> , deep reinforcement learning for matching markets, diversity in matching markets	Max Planck Institute for Software Systems (one-year program before her PhD)
Willy Lang	UMD	2017–	diversity in matching markets	Flatiron Health
Cameron Moy	UMD	2017–18	<i>Summer REU</i> , deep reinforcement learning for matching markets	Northeastern University (PhD)
Ishaan Parikh	UMD	2017–	ethics and AI	
Linyi Xi	Haverford	2017–18	<i>Summer REU</i> , deep reinforcement learning for matching markets	CMU LTI (MSc)
Ayman Karim	UMD	2016–17	using sentiment and social network analysis to predict winners in WWE matches	Blend
Aditya Mithas	UMD	2016–17	deep reinforcement learning for matching markets	Google
Kevin Schechter	UMD	2016–17	prediction markets	Microsoft
Benjamin Plaut	CMU	2015–16	combinatorial optimization and kidney exchange	Stanford CS

### High School Students

Student	School	Year(s)	Project	Next University
Zachary Zhao	Montgomery Blair	2019–	Deep learning & graph neural networks for NP-hard problems such as maximum independent set (MIS) and set packing with application to kidney exchange.	
Naveen Durvasula	Montgomery Blair	2016–	Co-advised with Aravind Srinivasan. Mechanism design and Bayesian optimization for kidney exchange.	University of California, Berkeley

### Awards & Distinctions Won By Students

Awards below were won by students I advise (or with whom I work closely) for our joint research projects.

Year	Student	Award
2019	Naveen Durvasula	Semi-finalist in the 78th Regeneron Science Talent Search; RSTS is the oldest and arguably most prestigious science and mathematics competition for high school students in the US
2019	Samsara Counts	Congress-Bundestag Youth Exchange for Young Professionals
2019	Naveen Durvasula	Junior Science and Humanities Regional Symposium (JSHS) oral presentation of research
2019	Naveen Durvasula	ACM/CSTA Cutler-Bell Prize in High School Computing
2018	Pan Xu	<i>Ann G. Wylie Dissertation Fellowship</i> from UMD’s Graduate School
2018	Pan Xu	<i>Outstanding Graduate Assistant Award</i> from UMD’s Graduate School
2018	Samsara Counts	Honorable Mention for the 2018 NCWiT Collegiate Award
2018	Samsara Counts	Google Lime Scholar

2017	Naveen Durvasula	Intel International Science and Engineering Fair (ISEF) Finalist, and won the Ashtavadhani Vidwan Ambati Subbaraya Chetty Foundation Second Award at Intel ISEF.
2016	Benjamin Plaut	Allen Newell Award for Excellence in Undergraduate Research

### Thesis Proposal & Defense Committees

PhD students for whom I have served as committee member are marked “CM”; PhD students for whom I have served as committee chair and advisor are marked “CC&A”.

Student	University	Role	Proposed	Defended	Next Position
Saba Ahmadi	UMD	CM	2019	TBD	
Candice Schumann	UMD	CC&A	2019	TBD	
Duncan McElfresh	UMD	CC&A	2019	TBD	
Shi Feng	UMD	CM	2019	TBD	
Alireza Farhadi	UMD	CM	2018	TBD	
Soheil Behnezhad	UMD	CM	2018	TBD	
Mahsa Derakhshan	UMD	CM	2018	TBD	
Hadi Yami	UMD	CM	2018	TBD	
Zheng Xu	UMD	CM	–	2019	Research Scientist, Google
Saeed Seddighin	UMD	CM	–	2019	Post-doc, Harvard University (sponsored by Michael Mitzenmacher)
Pan Xu	UMD	CC&A	2018	2019	Assistant Professor of Computer Science, New Jersey Institute of Technology (NJIT)
Elissa Redmiles	UMD	CM	2018	2019	Assistant Professor of Computer Science, Princeton University (one-year deferral to do a post-doc at Microsoft Research in Redmond)
Faez Ahmed	UMD	CM	2018	2019	Assistant Professor of Mechanical Engineering, MIT (one-year deferral to do a post-doc at Northwestern)
Karthik A. Sankararaman	UMD	CM	2018	2019	Research Scientist, Facebook
Soham De	UMD	CM	–	2018	Research Scientist, Google DeepMind
Eric Krokos	UMD	CM	2017	2018	US Department of Defense
Zhuoshu Li	WashU	CM	2017	2018	Software Engineer, Google
Rama Padmanabhan	UMD	CM	2018	2018	Post-doc, UCSD Computer Science
Jinfeng Rao	UMD	CM	–	2018	Research Scientist, Facebook
Srijan Kumar	UMD	CM	–	2017	Post-doc, Stanford Computer Science (followed by Assistant Professor of Computer Science at Georgia Tech)
Yulu Wang	UMD	CM	–	2017	Software Engineer, Google

## Service and Outreach

**Conferences**

Organizer	AAAI/SIGAI Job Fair Co-Chair (at AAAI'18, '19, '20) AAMAS Sponsorship Chair NA ('19) DSAA Journal Track Co-Chair ('19) Fair Allocation in Multiagent Systems (FAMAS) (at AAMAS'19) EXPLORE (at AAMAS'17)
Steering Committee	Agents & Incentives in AI (AI <sup>3</sup> ) at AAMAS/ICML/IJCAI ('18)
SPC Member	AAAI (Main Track '20, Social Impact Track '19, '20) AAMAS ('19)
PC Member	AAAI ('13, '17, '18, '19) AAMAS ('17, '18) AISTATS ('17, '19) AI, Ethics, & Society (Main Track '18, '19, Student Program '19) COMSOC ('18) EC ('17, '18, '19) ICML ('16, '17, '18, '19) IJCAI ('13, '16, '17, '18, '19) TinyToCS ('12)
PC (Workshops)	EXPLORE at AAMAS ('14, '15, '16, '17) Adversarial Reasoning in Multi-agent Systems at AAMAS ('17) Opinion Aggregation, Dynamics, and Elicitation (WADE) at EC ('18) Mechanism Design for Social Good (MD4SG) at EC ('18, '19)
Reviewer	AAAI ('14, '16) AAMAS ('12, '16) ADT ('15) CPAIOR ('13) EC ('12) IJCAI ('15) NeurIPS ('16, '17, '18, '19, '20) SODA ('17) TARK ('17)
Session Chair	INFORMS (Invited Session, Auctions Cluster '14, '15, '16, '19) INFORMS IOS ('16)
Travel Grant	AAMAS ('12, '14), AAAI ('13, '15), SoCS ('13)

**Journals**

Associate Editor	Journal of Artificial Intelligence Research (JAIR, 2019–2021)
Reviewer	Management Science Operations Research Journal of Artificial Intelligence Research (JAIR) Artificial Intelligence (AIJ) ACM Transactions on Economics and Computation (TEAC) European Journal of Operations Research (EJOR) International Journal of Production Research (IJPR) Annals of Mathematics and Artificial Intelligence (AMAI) Computers & Operations Research (COR) Mathematical Social Sciences (MSS) Artificial Intelligence Review (AIRE) ACM Transactions on Intelligent Systems and Technology (TIST)

**Professional Service**

Elected Office	Secretary/Treasurer of ACM SIGAI (2019–2022)
Appointed Office	Labor Market Officer of ACM SIGAI (2018–2019)

**University Service**

AY2019– <i>Present</i>	UMD	Distinguished Lecture Series (DLS) Organizer
AY2019–20	UMD	Department Council Member
AY2019– <i>Present</i>	UMD	UMIACS Appointments, Promotions, and Tenure (APT) Committee
AY2018– <i>Present</i>	UMD	Director, High School Programming Competition
AY2017– <i>Present</i>	UMD	Diversity Committee
AY2016– <i>Present</i>	UMD	Artificial Intelligence Field Committee
AY2016– <i>Present</i>	UMD	High School Student Matching & Placement Committee
AY2019–20	UMD	Faculty Hiring Committee
AY2017–19	UMD	Faculty board member, ML@UMD
AY2017–18	UMD	Faculty Hiring Committee
AY2017–18	UMD	Teaching Awards Committee
AY2016–17, 17–18	UMD	PhD Admissions Committee
2017	UMD	Judge, Daemon Dash Hackathon
AY2012–13, 13–14	CMU	Admissions Committee
2012	CMU	Visit Weekend planning committee
2012	CMU	President of Dec/5 (SCS graduate student organization)
2011, 2012	CMU	Artificial Intelligence Reading Group (AIRG) planning

Last updated: September 2019

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