



MD4SG '19

3rd Workshop on Mechanism Design for Social Good

June 28, 2019 at Phoenix, Arizona

Sponsors

The Third Workshop on Mechanism Design for Social Good is generously supported by *Schmidt Futures*, the *MacArthur Foundation*, the *ACM Conference on Economics and Computation*, and the *Institute for New Economic Thinking – Young Scholars Initiative*.

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- Matt Weinberg, Princeton University
- Bryan Wilder, University of Southern California

Networking Breakfast

- Sara Kingsley
- Eric Sodomka, Facebook Research

MD4SG '19 Program (*Phoenix Convention Center, Room 232A*)

Time	Event	Authors
7:30-8:30	Networking Breakfast (<i>West building, Room 101A</i>)	Sara Kingsley and Eric Sodomka
8:30-8:35	Opening Remarks	Rediet Abebe and Irene Lo
	SESSION 1: DEVELOPING WORLD	
8:35-9:20	Keynote: Research Experiences Developing Technology in/for/from Africa	Sekou Remy
9:20-9:35	Design of Incentive Programs for Optimal Medication Adherence	Sze-Chuan Suen, Diana Negoescu and Joel Goh
9:35-9:40	Bridging Markets for Small Scale Farmers with Mechanism Design	Mwiza Simbeye , Mwila Kangwa and Patrick Sikalinda
9:40-9:45	Mechanism Design for Matching in Nigeria's National Youth Service Corps: A Case Study	Ifeoma Okoh , Oluwakemi Akinwehinmi, Israel Akowe, Oluwakemi Fasae, Memunat Ibrahim , John Ojetunde, Peter Ogunremi, Rachel Ojo, Ifeoluwa Oladeji, Olajide Oladejo, Oluwafemi Olaoye, Tosin Oyetayo, Emmanuel Oziyusuf and Eric Sodomka
9:45-10:00	Break	
	SESSION 2: ASSIGNMENTS AND CHOICE	
10:00-10:45	Keynote: Putting Ethical AI to the Vote	Ariel Procaccia
10:45-11:00	The Determinants of Physicians' Location Choice: Understanding the Rural Shortage	Elena Falcettoni
11:00-11:15	The Short and Long Run Impacts of Centralized Clearinghouses: Evidence from Matching Teach For America Teachers to Schools	Jonathan Davis
11:15-11:20	Selling Fairness: Reflections on Commercializing the Course Match Allocation Mechanism	Matt Boulos
11:20-12:30	FCRC KEYNOTE	
12:30-1:30	Lunch and Poster Session (<i>Room 301/Foyer</i>)	
	SESSION 3: LAW AND POLICY	
1:30-2:15	Keynote: Mechanisms to Reduce Greenhouse Gas Emissions	Valerie Thomas
2:15-2:30	Transparency and Fairness in School Choice Mechanisms	Yoan Hermstruewer

Time	Event	Authors
2:30-2:45	Characterizing Models through Practices: A Case Study in Algorithmic Employment Screening	Solon Barocas, Jon Kleinberg, Karen Levy and Manish Raghavan
2:45-3:00	When to Limit Market Entry under Mandatory Purchase	Meryem Essaidi , Kira Goldner and Matthew Weinberg
3:00-3:15	Break	
SESSION 4: MITIGATING INEQUALITY		
3:15-3:30	Fairness and Utilization in Allocating Resources with Uncertain Demand	Kate Donahue and Jon Kleinberg
3:30-3:45	Toward Controlling Discrimination in Online Ad Auctions	L. Elisa Celis, Anay Mehrotra and Nisheeth Vishnoi
3:45-4:00	The Salary Taboo: Privacy Norms and the Diffusion of Information	Zoe Cullen and Ricardo Perez-Truglia
4:00-4:15	Redistribution through Markets	Piotr Dworczak, Scott Kominers and Mohammad Akbarpour
4:15-4:30	Break	
SESSION 5: THE LIMITS OF THEORY IN BRIDGING RESEARCH AND PRACTICE		
4:30-4:45	Fair Classification and Social Welfare	Lily Hu and Yiling Chen
4:45-5:00	Bridging the ‘Normative Gap’: Mechanism Design and Social Justice	Zoe Hitzig
5:00-5:50	Panel: Bridging Research and Practice	<i>Panel moderator:</i> Sera Linardi <i>Panelists:</i> Miranda Bogen, Dina Machuve and Valerie Thomas
5:50-6:00	Closing Remarks	Rediet Abebe and Irene Lo

Presenting authors are in bold.

Posters and Product Demonstrations

“A Low Cost Automated Clinical Pathway for Supporting the Clinical Decision Process” by **Geletaw Sahle Tegenaw**, Bart Jansen, Frank Verbeke, Jan Cornelis, Demisew Amenu Sori and Girum Ketema

“Pricing a Mobility Marketplace” by **Chamsi Hssaine**, Siddhartha Banerjee, Ragavendran Gopalakrishnan and Samitha Samaranyake

“AI in Africa: Regional Data Protection and Privacy Policy Framework by Design” by **Raymond Onuoha**

“Automatic Generation of Sentiment Index: Wasserstein Index Generation model and Education Inequality Sentiment Index” by **Fangzhou Xie**

“Bridging Markets for Small Scale Farmers with Mechanism Design” by **Mwiza Simbeye**, Mwila Kangwa and Patrick Sikalinda

“Data Browser: MD4SG Platform” by **Bikalpa Neupane**, Aatish Neupane, Sara Kingsley and Swathi Sadagopan

“Dynamic Transport Route Optimization Using User Feed Data A Case Study of Pioneer Bus Company and Town Service Taxi Operators IN Uganda” by **Kenneth Kyamanywa**

“Equilibrium Effects of Pay Transparency in a Simple Labor Market” by **Bobak Pakzad-Hurson** and Zoe Cullen

“Fair Division Without Disparate Impact” by Alexander Peysakhovich and **Christian Kroer**

“Fuzzy-Based Approach in Modelling User Preferences in Multi-criteria Recommender System” by **Nkiruka Odu** and Muhammad Hamada

“Game-theoretic Modeling of Pre-disaster Relocation” by **Vicki Bier**, Yuqun Zhou and Hongru Du.

“Group Fairness in Influence Maximization” by Alan Tsang, **Bryan Wilder**, Eric Rice, Milind Tambe and Yair Zick

“Group Fairness for the Allocation of Indivisible Goods” by Vincent Conitzer, **Rupert Freeman**, Nisarg Shah and Jennifer Wortman Vaughan

“Incentive Mechanism for Mobile Community Sensing with Smallholder Farmers in a Developing Nation.” by **Daniel Mutembesa**

“Individual Fairness in Sponsored Search Auctions” by Shuchi Chawla, Christina Ilvento and **Meena Jagadeesan**

“Inefficiency-Manipulability Tradeoff in the Parallel Mechanism” by **Jerry Anunrojwong**

“Inferring Gender and Sentiment Analysis from Streaming Sexual Violence Tweets in South Africa” by **Jude Oyasor**, Mpho Raborife and Pravesh Ranchod

“k-Ticket Lotteries: Insights from Alaska” by **Timothy Randolph** and Nick Arnosti

“Long Term Impact of Fair Machine Learning in Sequential Decision Making: Representation Disparity and Group Retention” by **Xueru Zhang**, **Mohammad Mahdi Khalili**, Cem Tekin and Mingyan Liu

“Matching Algorithms for Blood Donation” by **Duncan Mcelfresh**, Christian Kroer, Sergey Pupyrev, Eric Sodomka and John Dickerson

“Mechanism Design for Crowd Management and Its Application to Mass Vaccination against Pandemic Threats” by **Atsushi Iwasaki**, Takanori Maehara, Shunya Noda and Taiki Todo

“Mechanism Design for Matching in Nigeria’s National Youth Service Corps: A Case Study” by **Ifeoma Okoh**, Oluwakemi Akinwehinmi, Israel Akowe, Oluwakemi Fasae, **Memunat Ibrahim**, John Ojetunde, Peter Ogunremi, Rachel Ojo, Ifeoluwa Oladeji, Olajide Oladejo, Oluwafemi Olaoye, Tosin Oyetayo, Emmanuel Ozi-Yusuf and Eric Sodomka

“On Testing for Biases in Peer Review” by **Ivan Stelmakh**, Nihar Shah and Aarti Singh

“Regression by Clustering using Metropolis-Hastings” by **Simón Ramírez Amaya**, Adolfo Quiroz and Álvaro Riascos

“Selling Fairness: Reflections on commercializing the Course Match allocation mechanism” by **Matt Boulos**

“The Rights of Residents in an Artificially Intelligent Austin – Texas” by **Ted Lehr** and **Charles Purma**

“Towards a Model for Enhancing ICT4 Development and Information Security in Healthcare System” by **Kehinde Aruleba**

“Towards Automated Poultry Diseases Diagnostics” by **Ezinne Nwankwo** and Dina Machuve

“Towards Fairness-Aware Classification Technique” by **George Musumba** and **Benjamin Otieno**

“Towards Interoperability of Electronic Medical Systems for Quality Health Care Provision in Developing Countries” by **Oscar Kunokho**

“WAGAW: Mobile Crowdsensing based Comparison Shopping Agent in Cloud-Centric Service” by **Salahadin Seid Musa**, Seid Yesuf and Towfik Jamal

“WeBuildAI: Participatory Framework for Algorithmic Governance” by **Min Kyung Lee**, Daniel Kusbit, Anson Kahng, Ji Tae Kim, Xinran Yuan, Allissa Chan, Ritesh Noothigattu, Daniel See, Siheon Lee, Christos-Alexandros Psomas and Ariel Procaccia

Presenting authors are in bold.

Keynote Presentations

RESEARCH EXPERIENCES DEVELOPING TECHNOLOGY IN/FOR/FROM AFRICA

Sekou Remy, IBM Research – Africa

In this talk, I will present some ongoing research performed at IBM Research Africa. Using the lens of healthcare, the talk will cover how applications of technologies like Machine Learning, Blockchain, and Cloud Computing have been developed, and are being studied in real world settings. These concepts are explored in the setting of continuity of patient care, decision-making in health policy, and the sharing of data, models, and results in a policy making context.



Sekou L. Remy is a Research Scientist and Technical Lead at IBM Research - Africa. A member of the healthcare team, he is excited about developing appropriate technologies based on Artificial Intelligence, Machine Learning, Blockchain and data analytics which will transform Africa, and the world. As the lead for the Policy Making with AI, one specific research effort explores the application these technologies to transform the development of intervention policies which will accelerate the eradication of malaria. Remy has a Bachelor's degree in Computer Science from Morehouse College, and a Doctor of Philosophy (Ph.D.) in Electrical and Computer Engineering from the Georgia Institute of Technology.

PUTTING ETHICAL AI TO THE VOTE

Ariel Procaccia, Carnegie Mellon University, Department of Computer Science

I will present the 'virtual democracy' framework for the design of ethical AI. In a nutshell, the framework consists of three steps: first, collect preferences from voters on example dilemmas; second, learn models of their preferences, which generalize to any (previously unseen) dilemma; and third, at runtime, predict the voters' preferences on the current dilemma, and aggregate these virtual 'votes' using a voting rule to reach a decision. I will focus on two instantiations of this approach: a proof-of concept system that decides ethical dilemmas potentially faced by autonomous vehicles, and a decision support tool designed to help a Pittsburgh-based nonprofit allocate food donations to recipient organizations. These projects bridge AI, social choice theory, statistics, and human-computer interaction; I will discuss challenges in all of these areas.



Ariel Procaccia is an Associate Professor in the Computer Science Department at Carnegie Mellon University. He works on a broad and dynamic set of problems related to AI, algorithms, economics, and society. His distinctions include a Guggenheim Fellowship (2018), the IJCAI Computers and Thought Award (2015), a Sloan Research Fellowship (2015), an NSF CAREER Award (2014), and the IFAAMAS Victor Lesser Distinguished Dissertation Award (2009). To make his research accessible to the public, he has founded the not-for-profit websites Spliddit.org and RoboVote.org, and has written op-eds for the Washington Post, Wired, and Bloomberg (where he is a regular contributor).

MECHANISMS TO REDUCE GREENHOUSE GAS EMISSIONS

Valerie Thomas, Georgia Institute of Technology, Industrial and Systems Engineering

The reduction of atmospheric greenhouse gases is one of the most important global environmental challenges. Greenhouse gases come from use of fossil fuel for transportation and electricity; and also from industry and agriculture. Widely discussed reduction mechanisms include carbon taxes and greenhouse gas cap and trade policy mechanisms. The cost of these policies have contributed to their slow global adoption. However, there are many opportunities for companies, individuals, and governments to reduce emissions and save money. Decision makers at all levels are often unaware of these opportunities. Many can be implemented with information technology. Some make use of behavioral and policy insights, and include feedback, games, social incentives, information approaches, and selection of baselines and defaults. A comprehensive private sector, government, and non-governmental framework can address climate change more effectively than an entirely policy-dependent approach. Examples and a path forward are presented.



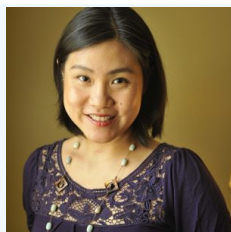
Valerie Thomas is the Anderson Interface Professor of Natural Systems in the School of Industrial and Systems Engineering at Georgia Tech, with a joint appointment in the School of Public Policy. Current research projects include energy in sub-Saharan Africa and U.S. bioenergy development. She is Associate Editor for the Journal of Industrial Ecology, and a member of the USDA/DOE Biomass R&D Technical Advisory Committee. She has held positions at Princeton and Carnegie Mellon, and has served as a Congressional Science Fellow. She has a PhD in high energy physics from Cornell and a B.A. in physics from Swarthmore.

Panel: Bridging Research and Practice

PANEL ABSTRACT

Doing research to address a specific real-world application presents unique challenges and opportunities. The goal of the panel is to compare various processes of research idea generation, paper publication, result dissemination, and policy engagement that the panelists have experienced and draw some takeaways on realistic ways to bridge research and practice.

PANELISTS



Panel moderator: **Sera Linardi** is an Associate Professor of Economics at the Graduate School of Public and International Affairs (GSPIA) at the University of Pittsburgh. She is an experimental economist who focuses on bridging academic research and the day-to-day challenges facing those who provide services to vulnerable populations.

Miranda Bogen is a Senior Policy Analyst at Upturn, where she focuses on the implications of machine learning and artificial intelligence for civil and human rights, and particularly on the intersection of digital technology, automated decisions, and economic opportunity.



Dina Machuve is a Lecturer and Researcher at the Nelson Mandela African Institution of Science and Technology (NM-AIST) in Arusha, Tanzania. She holds a PhD in Information and Communication Science and Engineering from NM-AIST in 2016. She co-organizes the Data Science Africa (DSA), an organization that runs an annual data science and machine learning summer school and workshop in Africa.

Valerie Thomas is the Anderson-Interface Professor of Natural Systems in the H. Milton School of Industrial and Systems Engineering, with a joint appointment in the School of Public Policy. Dr. Thomas's research interests are energy and materials efficiency, sustainability, industrial ecology, technology assessment, international security, and science and technology policy.

