Report on the 2nd ACM Conference on Equity and Access in Algorithms, Mechanisms, and Optimization (EAAMO 2022)

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1. INTRODUCTION

The second annual ACM Conference on Equity and Access in Algorithms, Mechanisms, and Optimization (EAAMO'22) was held from October 6-9 at George Mason University in Arlington, VA, USA. This was the first in-person version of the conference: the first event was held virtually in 2021. The conference builds on a line of workshops on Mechanism Design for Social Good (MD4SG) held previously at the ACM Conference on Economics and Computation, and is affiliated with the broader MD4SG initiative. In both 2022 and 2021, SIGecom was a sponsor of the conference. EAAMO aims to highlight work where techniques from algorithms, optimization, and mechanism design, along with insights from the social sciences and humanistic studies, can help improve equity and access to opportunity for historically disadvantaged and underserved communities. A key goal of the conference is to bridge research and practice in this area. Accordingly, we aimed to foster an interdisciplinary community, including researchers from a computer science, operations research, economics, policy, and more, as well as practitioners and policymakers working in areas related to inequality. The conference featured contributed papers and posters as well invited keynote talks, a panel discussion, a doctoral consortium, and community-building activities and social events.

2. KEYNOTE SPEAKERS AND PANELISTS

The conference featured three keynote speakers.

Karen Smilowitz, James N. and Margie M. Krebs Professor in Industrial Engineering and Management Sciences, Northwestern University, gave a talk on *Emerging trends and new research directions in volunteer management*

Karen's talk overviewed a long line of work, including her own in logistics and volunteer management, discussing nonprofit operations and volunteer management. Nonprofit operations have pressing needs, but often rely on a volunteer base and

therefore cannot match supply and demand of labor using wages. Novel opportunities for volunteer engagement, and algorithmic developments, arise with the prevalence of online platforms.

Marcella Alsan, Professor of Public Policy, Harvard Kennedy School, gave a talk on *Representation and extrapolation: Evidence from clinical trials.*

Marcella Alsan is an applied microeconomist studying health inequality. Her talk discussed the consequences and causes of low enrollment of Black patients in clinical trials. In extensive survey experiments, they find that physicians are more willing to prescribe drugs tested in representative samples. They also develop a model of extrapolation in which evidence from representative clinical trials is more likely to affect decision-making. The increased costs of representative enrollment and these benefits of representation can explain the persistence of health inequalities.

Sello Mokwena, Professor of Computer Science, University of Limpopo, gave a talk on *Factors influencing low adoption rate of technologies in developing countries.*

Sello's talk discussed studies on factors affecting technology adoption in developing countries, using surveys, qualitative analysis, and theories of technological diffusion in information systems. Sello's work surfaces common themes as to why South African Small Medium Enterprises (SMEs), consumers and government institutions (especially in rural areas) in developing countries face difficulties in adopting technology, such as awareness, cost reduction requirements, and complexity issues.

The conference also featured a panel discussion. The panel included Emanuela Galasso, Senior Economist in the Development Research Group (Poverty and Inequality Team) at the World Bank; Rebecca Johnson, Assistant Professor at McCourt School of Public Policy, Georgetown University; and Sello Mokwena, Professor of Computer Science, University of Limpopo. The panel topic was "Opportunities and Barriers in Bridging Research and Practice" and was moderated by Sera Linardi.

3. CONFERENCE PROGRAM

Conference program overview.

We received over 150 submissions for publication from over 20 countries around the world and across fields, spanning authorship from researchers, policymakers, as well as other domain experts and professionals. All contributors were united by their interest in improving equity and developing solutions for problems in a variety of application domains such as education, labor, environment, healthcare, algorithmic fairness, and digital platforms. Due to its interdisciplinary nature, the conference attracted a very diverse and large group of members with backgrounds in computer science, A.I., operations research, economics, public policy, and humanities, while a great number of papers combined methodologies and insights from multiple fields. Each contributed paper was rigorously peer-reviewed by members of a program committee who were chosen from fields related to the topics of the conference. Out of all submissions, 39 were accepted for oral presentation and 55 were accepted for poster presentation.

From the papers accepted for oral presentation, 19 opted to appear in the second volume of the archival track of the conference: the 2022 Proceedings of EAAMO '22: Equity and Access in Algorithms, Mechanisms, and Optimization published by

the ACM. The conference also provides a non-archival presentation option, aiming to enable participation by researchers in journal-focused fields. Out of the accepted papers, we gave awards in the following categories: Best Paper, Best Paper with a Student Presenter, and New Horizons.

Conference program themes.

Our program was organized into paper sessions. Many themes emerged, cross-cutting across methods (theory, algorithms, economics, operations research, data science/machine learning, empirical studies, policy analysis) and application areas. Many themes were related to policy design.

One common thread was a focus on *the empirical, algorithmic, economic and operational* modeling of service delivery, constrained allocation, and incentives. Motivating domains included public sector service delivery (e.g., homelessness services or education) as well as settings related to development. A range of papers developed theoretical or empirical analyses of such settings, including dynamics such as strategic behavior, online interactions, robustness, and inequalities in access. In the policy & practice track, the conference also featured lessons from the field on public-sector deployments in these areas. A related area of focus was that of computational social choice, including extensive empirical and practical work on case studies, algorithmic work on gerrymandering and redrawing congressional or school district boundaries with an equity objective.

Another common theme was centered on the social sciences, whether via the algorithmic/theoretical study of classical social science models or concepts, or thorough empirical social sciences studies of inequality in policy-relevant settings, including normative theory articulating moral foundations for appealing mathematical definitions of fairness. A theme of growing interest this year was *human factors/human-computer interaction* in understanding perception of algorithms in practice as well as comparing practitioner understandings of diversity with proposed algorithmic notions; i.e. studying human aspects of perceptions of inequality as well as mechanisms for the persistence of inequality.

Paper awards.

The Best Paper award winner was:

—Bias, Consistency, and Partisanship in U.S. Asylum Cases: A Machine Learning Analysis of Extraneous Factors in Immigration Court Decisions by Vyoma Raman, Catherine Vera and C.J. Manna

The Best Paper with Student Presenter awards were:

—Improving Access to Housing and Supportive Services for Runaway and Homeless Youth: Reducing Vulnerability to Human Trafficking in New York City by Yaren Bilge Kaya, Kayse Maass, Geri Dimas, Renata Konrad, Andrew Trapp and Meredith Dank

—On Meritocracy in Optimal Set Selection by Thomas Kleine Buening, Meirav Segal, Debabrota Basu, Anne-Marie George and Christos Dimitrakakis

The New Horizons Award that recognizes a paper that pushes the frontiers of AI research was awarded to:

—Dimensions of Diversity in Human Perceptions of Algorithmic Fairness by Nina Grgić-Hlača, Gabriel Lima, Adrian Weller and Elissa M. Redmiles

Community building events on the program.

The program provided several community-building social events, chaired by Lily Xu and Roozbeh Yousefzadeh. Events included breakout sessions organized by *regional and affinity groups*, *research fields*, *application areas*. Affinity groups included Queer and Black affinity groups, and regional groups such as Africa and the Middle East, Latin America and the Caribbean, Asia/Pacific, Europe. Research fields included CS theory and CS fairness, law and public policy, economics, and operations research. Application areas included Healthcare, Housing, Education, Environment, Civic Participation, Algorithmic Bias.

The conference also featured a doctoral consortium, organized by Hamsa Bastani and Juba Ziani. This event provided PhD students (primarily drawn from computer science, operations research, and economics) with the opportunity to meet one another on the first day of the main conference and participate in a roundtable discussion on career paths in the interdisciplinary areas spanned by the conference. The event also featured a poster session open to all conference attendees for students to present their work. Finally, students were placed into groups to meet with faculty mentors over the course of the conference. We believe that this program provided an important means for graduate students, especially those new to the event, to become part of the community.

Finally, the conference included a junior faculty session organized by Nikhil Garg and Faidra Monachou. Attendees were primarily junior faculty in computer science, operations research, and economics departments. The session served as the launch for a MD4SG junior faculty network. Participants felt that there would be great value to enabling exchange of experiences, both from senior faculty and between junior faculty, about the process of doing impact-focused research. For example, a common set of questions relate to building effective collaborations with nonprofit partners. These reflections have helped set priorities for later junior faculty network events, e.g., a virtual panel on nonprofit collaborations. There was also interest in organizing social events in conferences as well as getting advice on topics such as grant writing, student advising etc. There is especially a lot of junior researcher energy across disciplinary fields, and it would be good to find ways to support/continue to collaborate across such fields.

Reviewing.

We had a two-stage review process. In the first stage, paper received three reviews from an initial set of program committee members, assigned based on bids. At the end of the first stage, reviewers engaged in a discussion process with area chairs to attempt to come to consensus on a decision. For papers where an additional perspective was needed, a new reviewer was assigned in the second stage. These reviewers were hand-selected by the area or program chairs to provide the expertise needed to reach an informed decision on each paper. We found this process to be particularly helpful because of the interdisciplinary nature of the conference. For many papers without consensus at the first stage, reaching a well-informed decision became much easier after adding a reviewer with the right subject-matter expertise,

who may have been in a different field than those assigned in the first stage.

Travel grants and other support.

An important component of the conference organization was providing travel grants to encourage as diverse participation as possible. Financial assistance was provided in the form of: registration waivers, travel grants and accommodation grants. Waivers were provided for forty-five in-person and forty-one virtual registrations, as well as sixteen travel grants and twenty-three accommodation grants. A particularly exciting program, facilitated by Francisco Marmolejo-Cossio, sponsored 7 female indigenous students from Mexico, who presented work from summer research with the Mechanism Design for Social Good (MD4SG) community during a dedicated poster session at the doctoral consortium.

4. CONCLUSION

The cross-cutting themes of conference papers resulted in sessions that featured multiple modes of analysis (for example, quantitative and qualitative) on similar topics. We are excited that the topical focus of EAAMO can bring together different perspectives and facilitate discussions among researchers in different fields studying similar systems and phenomena toward goals of improving equity. Given the breadth of disciplinary perspectives and networks, we thought that topically organized breakout sessions and community-building activities such as the junior faculty network were particularly helpful in highlighting shared interests among attendees.

We believe we succeeded in creating an inclusive in-person conference on how computational tools and algorithms, together with economic approaches and mechanism design, can address equity, access, and other urgent societal challenges.

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