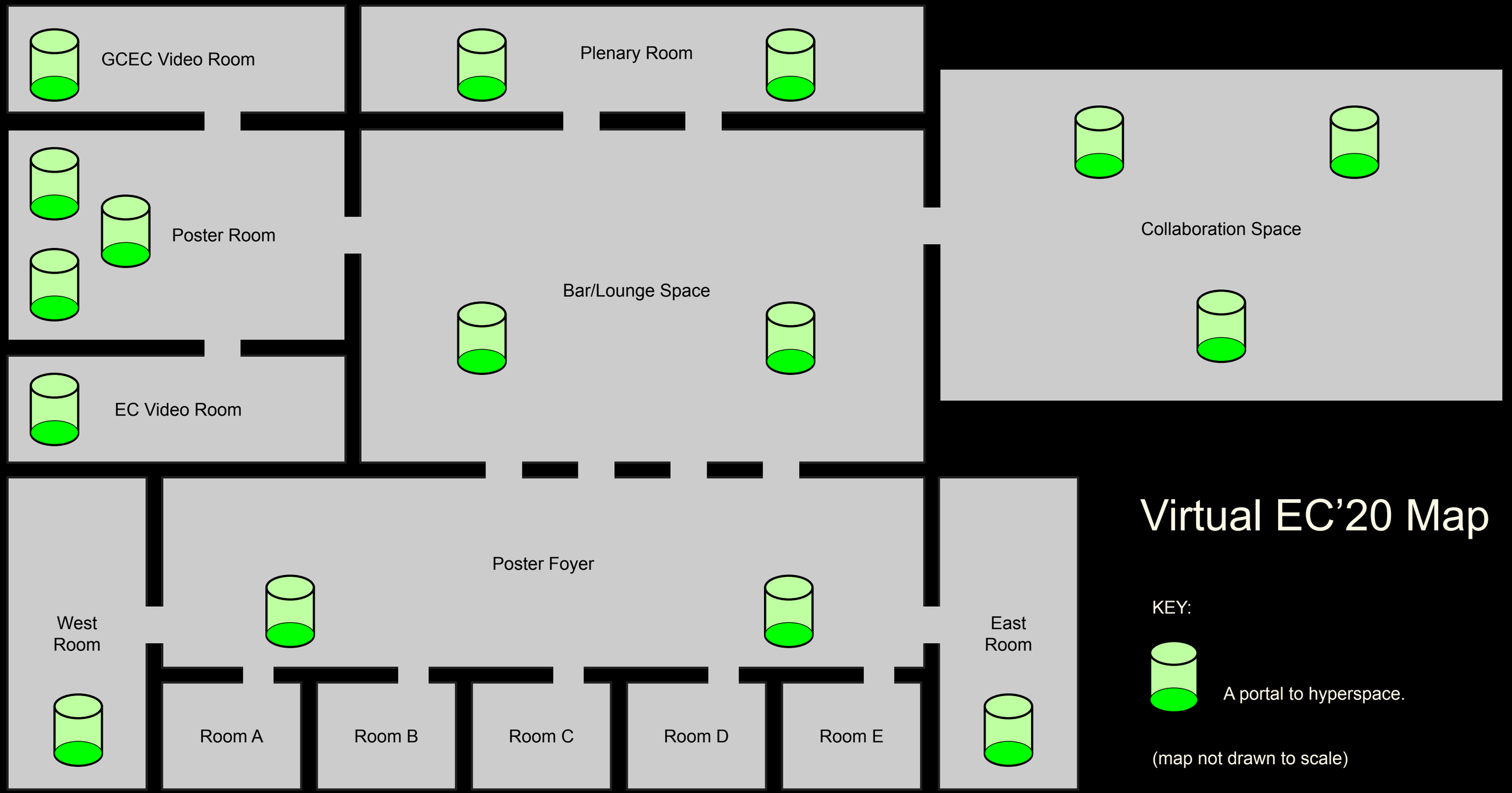

Virtual EC'20 Map

KEY:

A portal to hyperspace.

(map not drawn to scale)

EC2020 Social Events

Throughout the conference: **Scavenger Hunt** (more details below). Complete challenges to vie for the prize! Whenever you have down time, stop by the Gather spaces to work on the Hunt.

Tuesday 12pm-12:30pm EDT: Junior/senior lunch. *Students and postdocs* are invited to join a small virtual table in the Gather Collaboration Space for an informal conversation, each hosted by a senior member of the EC community. No need to sign up, just drop by (each table can accommodate up to 8 people).

Tuesday 2:30pm-3pm EDT: Speed networking. *All attendees* are invited, but we can only accommodate the first 100 arrivals. Meet a new member of the EC community every two minutes, learning a bit about each other using prompted questions. Hosted in the Zoom Webinar room, accessible Gather. (Question list below).

Wednesday, 12pm-12:30pm EDT: Amazon intern panel. Join this virtual event, in a Zoom room accessible from Gather, to hear from previous Amazon interns who are now using their skills full time at Amazon to enhance our customers' experience. The event will feature opening remarks from Nikhil Devanur, Principal Applied Scientist, and a Q&A panel from former Amazon interns from Amazon Web Services and the Amazon Sponsored Products Advertising team. Be sure to RSVP for this event.

Wednesday, 2:30pm-3pm EDT: Hosted coffee chats. *All attendees* are invited to join a virtual table in the Gather Collaboration Space for a conversation on topics ranging from market design to social justice to jobs in industry… and more! (See below for full list.) No need to sign up, just drop by (each table can accommodate up to 8 people).

Thursday, 12-12:30pm EDT: Junior/senior lunch. *Students and postdocs* are invited to join a small virtual table in the Gather Collaboration Space for an informal conversation, each hosted by a senior member of the EC community. No need to sign up, just drop by (each table can accommodate up to 8 people).

Thursday, 2:30pm-3pm EDT: The EC Quiz show. Tune in for everyone's favorite game show where we learn about our colleagues' expertise on topics far outside their expertise. *All are invited,* no need to sign up in advance. Hosted in the Zoom Webinar room, accessible from Gather.

Scavenger Hunt Details

The hunt consists of six challenges. To “collect” a participant, you must have a video/voice chat with them in Gather during one of the EC conference breaks, and ask if you can put them down on your Scavenger Hunt form. Once you’ve finished (even if you don't complete all the Challenges), you can enter your form for a drawing for the prize (a copy of The Colossal Book of Short Puzzles and Problems by Martin Gardner) here: https://forms.gle/Do3Povo2Dzufs4AW9 . Deadline to enter is Friday, July 17, 2020, at 5pm east coast time. We’ll pick a winner at random from among those with the greatest number of challenges completed (we may check your answers or that the people you collect acknowledge meeting you). Any EC participant should appear at most once on your form (you can’t use the same person for multiple challenges). The Scavenger Hunt is open to all registered participants of EC 2020, except the Virtual Transition team and SIGecom Executive Officers.

The Challenges:

1. Collect five participants whose institutions are in five different countries (name, institution, country for each)
2. Collect a participant who received their undergraduate degree 10 years before or 10 years after you received yours. So, for example, if you received your degree in 2000, you are looking for someone who received theirs in either 1990 or 2010. ((anticipated) year and institution where you received your undergraduate degree; person, year and institution where they received their degree)
3. Collect two participants who are attending EC for the first time (name, institution for each)
4. Collect two participants who have attended EC at least five times before 2020 (name, institution for each)
5. Collect two participants who have been to Budapest, Hungary (the originally planned host city for EC 2020). (names for each)
6. Find the cat in EC’s Gather spaces. Where did you find her, and when?

Speed Networking Questions

Have these questions ready in front of you when you join the session:

1. What session are you most looking forward to and why?
2. What's one topic you would love to learn more about?
3. (senior researchers) If you could start over as a PhD student today, what would you work on? (junior researchers) If you could have been a PhD student 20 years ago, what would you have worked on?
4. Tell me about a favorite paper you've read.
5. What has been the most challenging aspect of moving your teaching/learning/research life online in the past few months?
6. What has been the most rewarding aspect of moving your teaching/learning/research life online in the past few months?
7. What do you love most about EC?

Hosted Coffee Chat Topics

Table 1	Scott Kominers and Sven Seuken	Market design
Table 2	Ariel Procaccia	From theory to practice
Table 3	Michal Feldman	Fairness in resource allocation
Table 4	Matt Weinberg	Navigating TCS+EC
Table 5	Rediet Abebe	EC & social justice
Table 6	Simina Branzei	Incentives in learning
Table 7	Preston McAfee	Working for tech companies
Table 8	Vasilis Syrgkanis	Working for tech companies (v2)
Table 9	Ramesh Johari	Data science for online platforms
Table 10	Nika Haghtalab	Economic and social aspects of ML

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A career at Amazon affords economists the opportunity to work with data of unparalleled quality, apply rigorous applied econometrics approaches, and work with some of the most talented applied econometricians in the trade. In addition to a number of top tier junior PhD economists hired in prior years, in the last three years, Amazon has been able to attract several new economists from top tier institutions. Led by our Chief Economist, Patrick Bajari, our senior team members include VP Chief Economist Phillip Leslie (UCLA-Anderson School of Management), Steve Tadelis (UC Berkeley), Greg Duncan (University of Washington), John Geweke (University of Technology, Sydney), Guido Imbens (Stanford GSB), Eric Zivot (University of Washington), Ron Borzekowski (Stanford), Ali Hortacsu (University of Chicago), and Victor Chernozhukov (MIT).

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We are a company of builders working on behalf of a global customer base. Diversity is core to our leader-ship principles, as we seek diverse perspectives so that we can be “Right, A Lot”. We welcome people from all backgrounds and perspectives to innovate with us. Learn more at amazon.com/diversity

amazon Economists

ACADEMIC COLLABORATION

AMAZON RESEARCH AWARDS

The Amazon Research Awards (ARA) program offers awards of up to $80,000 to faculty members at academic institutions in North America and Europe for research in these areas:

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- Economics
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- Machine learning algorithms and theory
- Machine translation
- Natural language processing
- Operations research and optimization
- Personalization
- Robotics
- Search and information retrieval
- Security, privacy and abuse prevention
- Speech

ara.amazon-ml.com

AWS PUBLIC DATASETS

AWS hosts a variety of public datasets that anyone can access for free.
aws.amazon.com/public-datasets

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Amazon Scholars is a new program for academic leaders to work with Amazon in a flexible capacity, ranging from part-time to full-time research roles. **amazon.jobs/scholars**

AWS EDUCATE

AWS Educate is Amazon's global initiative to provide students and educators with the resources needed to greatly accelerate cloud-related learning endeavors and to help power the entrepreneurs, workforce, and researchers of tomorrow.
aws.amazon.com/grants

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TEAM SPOTLIGHTS

CORE AI

The Core AI team is an interdisciplinary team on the cutting edge of economics, statistical analysis, and machine learning whose mission is to solve AI and ML problems that have high risk with abnormally high returns. Through our efforts we seek to understand and design Amazon's complex network of buyers and sellers, while also leveraging the strengths of our engineers and scientists to build solutions for some of the toughest business problems here at Amazon.

AMAZON WEB SERVICES

Amazon Web Services (AWS) provides an ever-growing suite of cloud computing resources all over the world. We work on customer targeting and service engagement, sales force impact measurement and optimization, and business strategy in this new and exciting industry.

AMAZON SEARCH

Our team manages product search and advertising technologies that are scalable, highly available, and cross-platform for our parent company, Amazon, and other clients. Amazon Search's Customer Experience team is building deep learning models to predict department conversion by query, client latency, optimal query rewriting, and top sellers by query.

AMAZON DEVICES

Amazon has revolutionized the device market with a versatile suite of e-readers, tablets, streaming tools, and unique products such as the Amazon Echo. We contribute in every area of device strategy, from forecasting to pricing to product feature design, to engagement tracking and optimization.

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Read more about Economics at Amazon: Amazon.Science

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Google tackles the most challenging problems in computer science and related fields. Being bold and taking risks is essential to what we do, and research teams are embedded throughout Google allowing our discoveries to affect billions of users each day. In doing so, we actively collaborate with, and learn from, the broader scientific community, and publish our research in traditional scientific venues, open source software releases, industry standards, data releases and patents.

Market Algorithms and Economics

Our mission in Market Algorithms is to analyze, design, and deliver economically and computationally efficient marketplaces across Google. Topics of interest include Mechanism Design, Learning in Markets and Optimization for Ad Auctions and other Online Marketplaces, Optimizing Advertising Campaigns, and Privacy. More at: research.google/teams/algorithms-optimization/ and research.google/teams/algorithms-optimization/market-algorithms/

University Relations

Ever since Google was born in Stanford's Computer Science department, the company has valued and maintained strong relations with universities and research institutes. In order to foster these relationships, we run a variety of programs that provide funding and resources to the academic and external research community, and make publicly available datasets aimed at furthering research across a range of computer science disciplines. Please check research.google/outreach for more information. These programs include Research Grants, Visiting Researchers, PhD Fellowships, Google Cloud Platform Education Grants. For more on the GCP program see: cloud.google.com/edu.

Student and New Graduate Employment Opportunities

We're always looking for talented and creative computer scientists for Software Engineer, Research Scientist and Intern positions. We hire people who are driven to rapidly innovate in all research areas. Google employs thousands of PhDs across these and other disciplines to work on real-world problems with high potential for impact.

Papers at ACM EC 2020

Budget-Constrained Incentive Compatibility for Stationary Mechanisms, Santiago Balseiro, Anthony Kim, Mohammad Mahdian and Vahab Mirrokni

Product Ranking on Online Platforms, Mahsa Derakhshan, Negin Golrezaei, Vahideh Manshadi, Vahab Mirrokni

Incentivizing Exploration with Selective Data Disclosure, Nicole Immorlica, Jieming Mao, Aleksandrs Slivkins, Zhiwei Steven Wu

Some Related Papers (EC, ICML, NeurIPS, WWW, WINE, ICLR, SODA ['19, '20]):

Vahab Mirrokni, Renato Paes Leme, Pingzhong Tang, Song Zuo**, Non-clairvoyant Dynamic Mechanism Design,** Econometrica, 2020.

Patrick Hummel, Uri Nadav, **Bid-Limited Targeting.** ACM Trans. Economics and Computing. 2020.

Eric Balkannski, Renato Paes Leme, **On the Construction of Substitutes.** Math. Oper. Res., 2020.

Yuan Deng, Sébastien Lahaie, Vahab Mirrokni, **Robust Pricing in Dynamic Mechanism Design,** ICML 2020.

Dongruo Zhou, Lihong Li, Quanquan Gu, **Neural Contextual Bandits with UCB-based Exploration,** ICML 2020.

Thodoris Lykouris, Vahab Mirrokni, Renato Paes Leme, **Bandits with Adversarial Scaling,** ICML 2020.

Haihao Lu, Santiago Balseiro, Vahab Mirrokni, **Dual Mirror Descent for Online Allocation Problems,** ICML 2020.

Yuan Deng, Sébastien Lahaie, Vahab S. Mirrokni, Song Zuo**, A Data-Driven Metric of Incentive Compatibility.** WWW 2020.

Renato Paes Leme, Balasubramanian Sivan, Yifeng Teng**, Why Do Competitive Markets Converge to First-Price Auctions?** WWW 2020.

Mahsa Derkhshan, Negin Golrezaei, Renato Paes Leme:, **LP-based Approximation for Personalized Reserve Prices.** EC 2019.

Sébastien Lahaie and Benjamin Lubin, **Adaptive-Price Combinatorial Auctions,** EC 2019.

Weiwei Kong, Christopher Liaw, Aranyak Mehta, D. Sivakumar**, A new dog learns old tricks: RL finds classic optimization algorithms.** ICLR 2019.

Gagan Aggarwal, Ashwinkumar Badanidiyuru, Aranyak Mehta: **Autobidding with Constraints.** WINE 2019.

Ashwinkumar Badanidiyuru, Mohammad Mahdian, Sadra Yazdanbod, Saeed Alaei: **Response Prediction for Low-Regret Agents.** WINE 2019.

Arash Asadpour, MohammadHossein Bateni, Kshipra Bhawalkar, Vahab Mirrokni, **Concise Bid Optimization Strategies with Multiple Budget Constraints.** Management Science 2019.

S Alaei, R Alaei: **Equilibrium pricing, routing and order quantity decisions in a three-level supply chain.** Journal

of Industrial and Systems Engineering, 2019.

Saeed Alaei, Hu Fu, Nima Haghpanah, Jason Hartline, Azaraksh Malekian: **Efficient computation of optimal auctions via reduced forms.** Mathematics of Operations Research 2019.

S Alaei, N Manavizadeh, M Rabbani: **Solving a two-period cooperative advertising problem using dynamic programming.** Iranian Journal of Management Studies 2019.

Saeed Alaei, Jason Hartline, Rad Niazadeh, Emmanouil Pountourakis, Yang Yuan: **Optimal auctions vs anonymous pricing.** Games and Economic Behavior 2019.

Jean Pouget-Abadie, Kevin Aydin, Warren Schudy, Kay Brodersen, Vahab Mirrokni, **Variance Reduction in Bipartite Experiments through Correlation Clustering.** NeurIPS 2019.

Yuan Deng, Jon Schneider, Balasubramanian Sivan, **Strategizing against No-regret Learners.** NeurIPS 2019.

Negin Golrezaei, Adel Javanmard, Vahab Mirrokni: **Dynamic Incentive-Aware Learning: Robust Pricing in Contextual Auctions.** NeurIPS 2019.

Santiago Balseiro, Negin Golrezaei, Mohammad Mahdian, Vahab Mirrokni, Jon Schneider, **Contextual Bandits with Cross-Learning.** NeurIPS 2019.

Yuan Deng, Sébastien Lahaie, Vahab Mirrokni, **A Robust Non-Clairvoyant Dynamic Mechanism for Contextual Auctions.** NeurIPS 2019.

Yuan Deng, Jon Schneider, Balasubramanian Sivan, **Prior-Free Dynamic Auctions with Low Regret Buyers.** NeurIPS 2019.

Weiran Shen, Sébastien Lahaie and Renato Paes Leme, **Learning to Clear the Market**. ICML 2019.

Santiago Balseiro, Vahab Mirrokni, Renato Paes Leme, Song Zuo**, Dynamic Double Auctions: Towards First Best.** SODA 2019.

David Rolnick, Kevin Aydin, Jean Pouget-Abadie, Shahab Kamali, Vahab Mirrokni, Amir Najmi**, Randomized Experimental Design via Geographic Clustering.** KDD 2019.

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Economics and Computation Research at Facebook

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At Facebook, we seek to provide strategic and operational insights using mathematical and computational tools from the areas of game theory, optimization, operations management and econometrics.

Our scientists conduct research that helps us refine the design of mechanisms used in auction markets and other systems, optimize network infrastructure and power consumption, and improve ranking and matching algorithms for FB/IG feed, social good, marketplace and commerce products. We rely on a combination of theoretical, computational and empirical techniques to produce novel research and generate new insights that can inform product recommendations.

EXAMPLES OF OUR WORK:

Auctions, Markets, and Mechanism Design

Auction Design in Structured Settings

Changes to an online platform's product or backend systems can lead to new auction design problems with particular structure. Perhaps a new product is introduced that effectively allows some goods to be divided between particular subsets of bidders. Perhaps information is realized postauction about what bidders are eligible to participate, or how much each bidder will value each good. Perhaps there is a change to machine learning models such that the estimate of each bidder's value for each good becomes more accurate, but at the cost of losing some structure that was exploited by the allocation algorithm. Our team works on designing auctions for such settings.

Principles of Heuristic Mechanism Design

A mechanism designer typically has some desiderata in mind (e.g., incentive compatibility, maximizing social welfare) that can be achieved in a stylized, theoretical model. Unfortunately the real world is often more complex: It often involves high-dimensional, stochastic, dynamic settings, which may require one to consider heuristic mechanisms that lack known guarantees. How can the mechanism designer measure the extent to which such a mechanism achieves desiderata in practice? How can one identify which components of the system are causing desiderata to be violated, and use that information to improve the mechanism?

Representation and Metrics

How can we encode large marketplaces as a compact representation of the interactions between participants? What metrics can we define to capture the key elements of the marketplace?

Pacing Equilibria

Budgets play a significant role in real-world sequential auction markets such as those implemented by Internet companies. We study how bidder spending can be smoothed in order to take budgets into account. We adopt a game-theoretic approach, where we study both theoretical properties and algorithmic issues of such markets.

Procurement Auctions and Framework Agreements

Facebook procures a significant amount of supplies from external providers. We help run procurement auctions that define supply contracts. We also use statistics, multi-armed bandits, and optimization to design good procurement strategies where the quality of the goods is uncertain. Our algorithms measure fluctuations in the quality of the goods that are being supplied.

Social Good and Connectivity

Mechanism Design for Social Good

How can you help people and select the right mentor for them, or help blood donors and the donation centers that need their blood type, or connect small businesses to potential employees so they can grow and expand? These are just a few examples of how we're using Facebook's social graph for social good.

Site Selection for Network Provision and Hardware Upgrades

To connect more people to the Internet, we partner with local ISPs in various countries to help provide high-quality connectivity at affordable prices. We build tools that rely on machine learning to understand latent demand for connectivity and select sites for new deployments and for upgrades.

Network Design

Facebook designs technology that helps connect people to the Internet in underserved areas. We work alongside hardware engineers to design services that can automatically plan networks that connect the maximum number of people at minimum cost, satisfying design constraints associated with the technology.

Networks and Social Mobility

We are currently studying the intersection of networks and social mobility to understand the relationship between connections and economic opportunity.

Networks and Decision Making

How do our friends influence our decision making and what we buy? Our economics research team has partnered with academics at top universities to study this question. We've published papers about the housing market, mortgage choice, and have forthcoming work on mobile phone purchases.

Economic Opportunity

Facebook has many products and services that provide economic opportunity across the world, from our newer jobs and marketplace products to our established tools for small businesses. We are actively exploring new areas and tools for providing economic opportunity including education, jobs training, career guidance, and mentorship and hope to connect and partner with experts in these areas.

Network Dynamics and Measurement

Our paper Measuring Social Connectedness explores the connection between network connections in the US and economic and social outcomes like trade, migration, and patent networks. We are expanding this work outside the US, as well as looking at city-level networks and the relationship between infrastructure and network structure in addition to the dynamics of connectivity.

Data Science and Machine Learning

Scalable, Automated Causal Inference with Synthetic Control

If experiments are infeasible, alternative methodologies for estimating causal effects on observational data, like synthetic control, become important for understanding Facebook's impact on the world. We're building systems for causal inference that accommodate high-dimensional control data, rigorously quantify the uncertainty in causal effect estimates, and generate automated diagnostics if the available controls are inadequate.

Efficient Experimentation over ML Models

Choosing the right machine learning model to deploy is hard: there are typically huge numbers of candidate models and relatively limited experimental bandwidth for testing them. How can we ensure that we're testing and shipping the best models? We're tackling this problem with counter-factual simulations and developing better evaluation criteria for ML models.

Improving Inference in Version Tests

Common practice is to analyze metrics in version tests in isolation, both from other metrics in the same test and from other tests. This can be highly inefficient. We're developing shrinkage estimators that increase the precision of our inferences, by incorporating information about the covariance structure of treatment effects, as estimated from previous tests.

Experimentation and Statistics

We design tools used internally by the company that rely on multi-armed bandits, reinforcement learning, Bayesian optimization, version testing, causal inference, time series forecasting, propensity score matching, artificial controls, etc.

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Microsoft

EC'20 Papers

*Microsoft affiliated authors are **bolded***

aka.ms/ec-2020

microsoft.com/en-us/research/theme/economics-and-computation

Tuesday, July 14

9:00AM – 11:00AM ET | New Solutions in Fair Division
Best of Both Worlds: Ex-Ante and Ex-Post Fairness in Resource Allocation
Rupert Freeman, Nisarg Shah, Rohit Vaish

12:30PM – 2:30PM ET | Secretaries and Prophets
Prophet Inequalities with Linear Correlations and Augmentations
Nicole Immorlica, Sahil Singla, Bo Waggoner

12:30PM – 2:30PM ET | Revenue Maximization
Escaping Cannibalization? Correlation-Robust Pricing for a Unit-Demand Buyer
Moshe Babaioff, Michal Feldman, **Yannai A. Gonczarowski, Brendan Lucier,** Inbal Talgam-Cohen

3:00PM – 5:00PM ET | Markets and Beyond
To Infinity and Beyond: Scaling Economic Theories via Logical Compactness
Yannai A. Gonczarowski, Scott Duke Kominers, Ran Shorrer

Wednesday, July 15

3:00PM – 5:00PM ET | Data and Privacy
Voluntary Disclosure and Personalized Pricing
S Nageeb Ali, **Greg Lewis,** Shoshana Vasserman

3:00PM – 5:00PM ET | Matching Theory
The Complexity of Interactively Learning a Stable Matching by Trial and Error
Ehsan Emamjomeh-Zadeh, **Yannai A. Gonczarowski,** David Kempe

Thursday, July 16

12:30PM – 2:30PM ET | Social Learning
Incentivizing Exploration with Selective Data Disclosure
Nicole Immorlica, Jieming Mao, **Aleksandrs Slivkins,** Zhiwei Steven Wu

12:30PM – 2:30PM ET | Optimal Auctions
Simple, Credible, and Approximately-Optimal Auctions
Costis Daskalakis, Maxwell Fishelson, **Brendan Lucier,** Santhoshini Velusamy, **Vasilis Syrgkanis**

Academic Research Awards

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Ada Lovelace Fellowship

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Microsoft Research Asia Fellowship Program

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Program	Who	How	Award	Learn More
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Dissertation Grant	4th year or beyond PhD student who self-identifies as underrepresented in the field of computing	Submit proposal directly	Funding up to $25,000 USD to help complete doctoral thesis research	aka.ms/Dissertation-Grant
Faculty Fellowship	Faculty within 5 years of receiving PhD or DSc, engaged in computing research, advise graduate students, and teach	Must be nominated by the university or a Microsoft researcher	$100,000 USD x 2 years	aka.ms/Faculty-Fellowship
Microsoft Research Asia Fellowship Program	2nd year PhD student attending a university in mainland China, Hong Kong, Japan, Korea, Singapore, or Taiwan, and whose research is closely related to MSR's general research areas	Student applies directly	Cash of $10,000 USD, 3 month internship with MSRA, + more	aka.ms/MSRA-Fellowships
PhD Fellowship	3rd year PhD student whose research is closely related to MSR's general research areas	Must be nominated by the university	Tuition + $42,000 USD stipend x 2 years	aka.ms/PhD-Fellowship
PhD Scholarship Programme in EMEA	University PhD Supervisors whose research is closely related to research themes at MSR Cambridge	Must be nominated by a Microsoft researcher	Annual bursary up to a maximum of three years or a maximum of four years for an EPSRC CASE award	aka.ms/EMEA-Scholarship
Research Fellow Program at MSR India	Graduating with BS/BE/Btech or MS/ME/MTech in CS by summer 2020	Submit CV directly	Spend 1 to 2 years at MSR India	aka.ms/Research-Fellow

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ACM Transactions on Economics and Computation

The Intersection of Economics and Computer Science

Information For Contributors

TEAC is a journal focusing on the intersection of computer science and economics. In the past decade there has been a surge of research in this area. This interaction is driven both by necessity and opportunity. On the one hand, as computer systems become more inter-connected, multiple parties must interact in the same environment and compete for scarce resources, which necessarily introduces economic phenomena. On the other hand, in the past, economic mechanisms (such as auctions and exchanges) have been designed to require very limited computing and communication resources, as they would otherwise be impractical. These days, computation and communication pose much less of a constraint, which presents an opportunity to create highly efficient, computationally intensive mechanisms. The goal is to keep the scope of the journal very broad and open to new directions in the intersection of computer science and economics, including both theoretical and applied directions.

Subject Areas

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- Algorithmic game theory
- Mechanism design
- Design and analysis of electronic markets
- Computation of equilibria
- Cost of strategic behavior and cost of decentralization ("price of anarchy")
- Learning in games and markets
- Systems resilient against malicious agents
- Economics of computational advertising
- Paid search auctions
- Agents in networks
- Electronic commerce
- Computational social choice
- Recommendation / reputation / trust systems
- Privacy

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ACM Transactions on Economics and Computation

The Intersection of Economics and Computer Science

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Covering the Full Spectrum of Social Computing

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***ACM Transactions on Social Computing* (TSC) seeks to cover the full spectrum of social computing including theoretical, empirical, systems, and design research contributions.**

Social computing is fundamentally about computing systems and techniques in which users interact, directly or indirectly, with what they believe to be other users or other users' contributions. TSC welcomes research employing a wide range of methods to advance the tools, techniques, understanding, and practice of social computing, including theoretical, algorithmic, empirical, experimental, qualitative, quantitative, ethnographic, design, and engineering research.

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TSC particularly solicits research that designs, implements or studies systems that mediate social interactions among users, or that develops or studies theory or techniques for application in those systems. Examples of such social computing systems include, but are not limited to: instant messaging, blogs, wikis, social networks, social tagging, social recommenders, collaborative editors and shared repositories. To illustrate the scope, we provide examples of research covered within TSC:

Theoretical

- Foundational algorithmic analyses that account for human and machine data and runtime complexity.
- The influence of scale; how differing scales of human and machine participation changes the designs and adoptions of systems.

Empirical

- Motivations for contributing to and participating in social computing systems, both intrinsic and extrinsic.
- Communications patterns in online communication forums.
- Ethnographic studies of social computing in situ.

Policy

- Social impacts of social computing use, such as Internet addiction or spread of misinformation, leading to recommendations to mitigate harms and enhance benefits.
- Ethical and policy issues in social computing.

Design

- Tools that help users understand the individual and collective roles of participants in social computing systems.
- Algorithms for personalization within a social computing context, including recommender systems and social matchmaking systems.
- Security and privacy mechanisms—both formal and interactive—related to social computing data and systems.
- The roles of artificial agents (aka bots) in social computing spaces, including the design, creation and management of those agents relative to social interactions within a social computing system

Systems

- System architectures and infrastructure for developing social computing platforms.
- Micro-tasking systems based on techniques for decomposing complex activities into recomposable tasks that can be completed by mixtures of people and machines.
- Crowdsourcing, collaborative content creation, productive social gaming or citizen science systems that include mechanisms to aggregate individual contributions for a collective goal.

Methodological

- Algorithms and approaches for extracting knowledge from social computing usage data and artifacts.

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Exploring the Mathematical Nature of Computation

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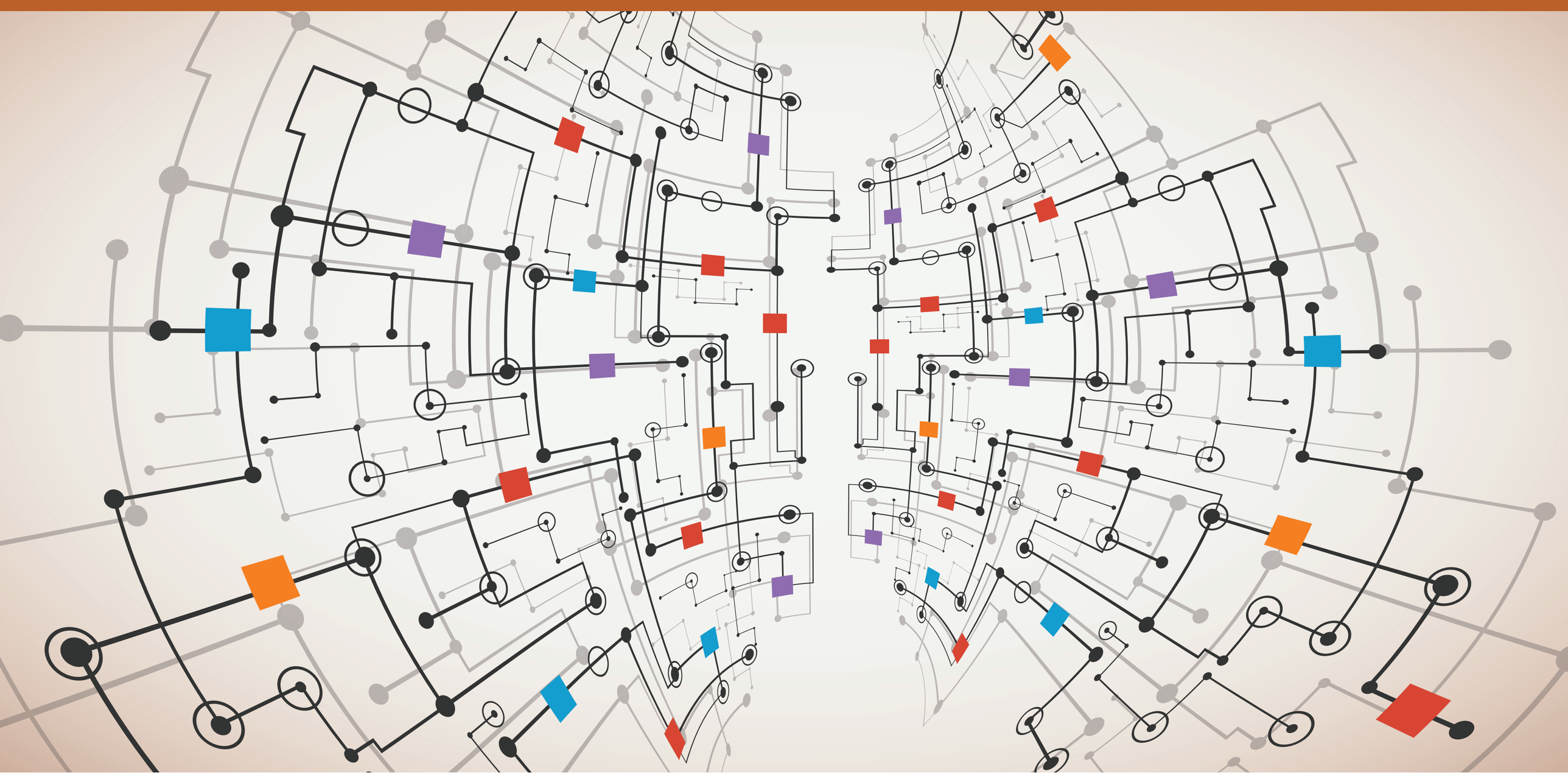

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- Foundations of cryptography
- Randomness and pseudorandomness in computing
- Coding theory
- Quantum computation
- Proof complexity
- Computational learning theory
- Computational game theory
- Property testing
- Lower bounds in computational models
- Boolean circuit complexity
- Algebraic complexity
- Parallel and distributed computation
- Communication complexity
- Parameterized complexity
- Inapproximability
- Discrete random systems
- Theoretical issues in other areas (economics, physics, databases, information retrieval, and networks)

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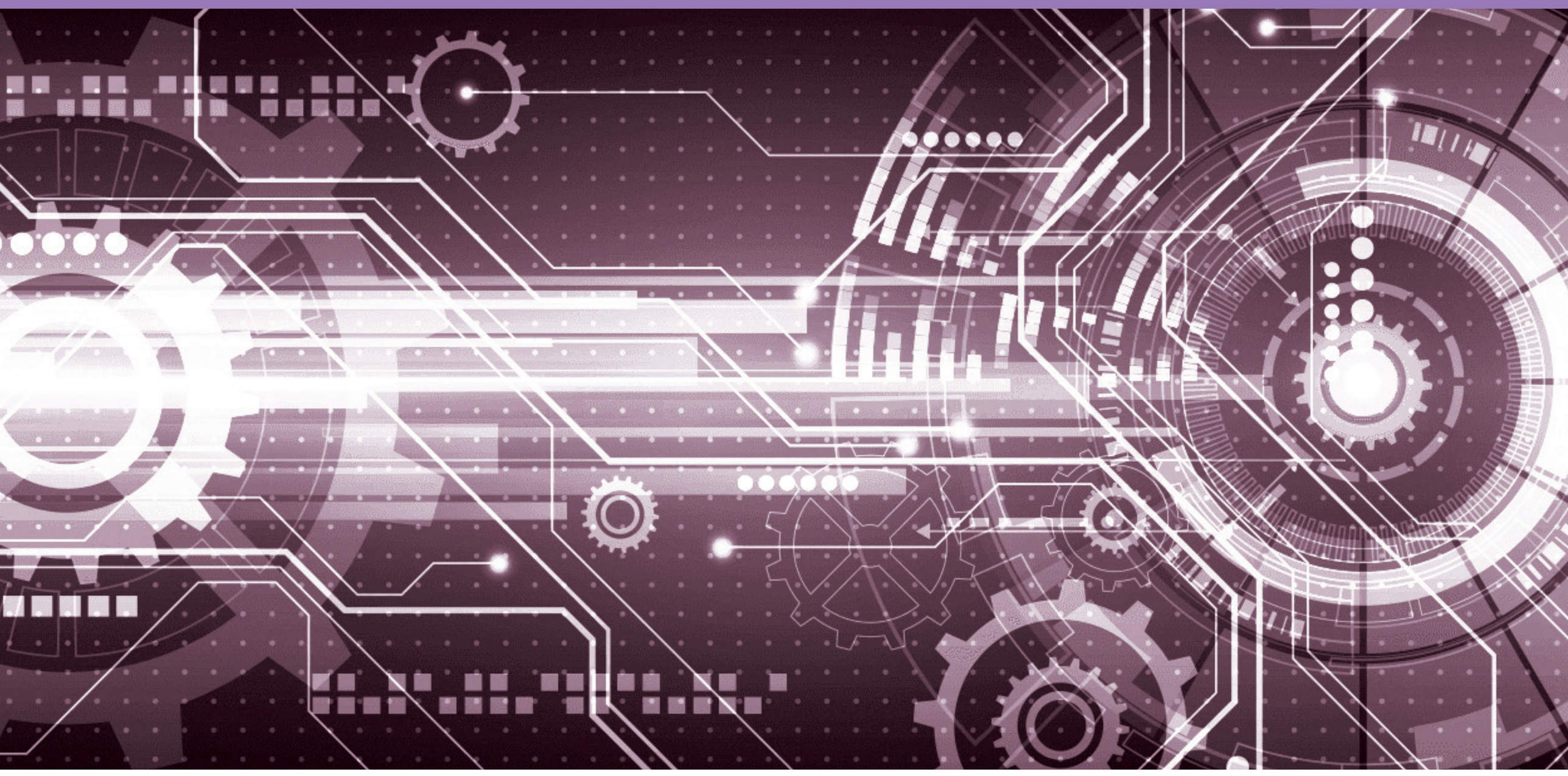

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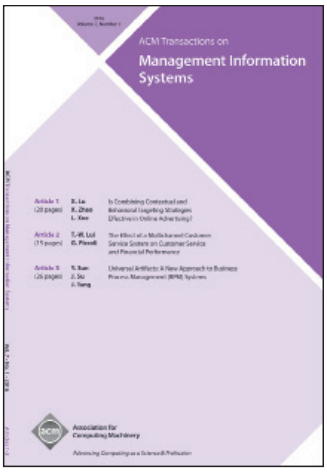

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