ABDULLAH ALMAATOUQ
Assistant Professor at Massachusetts Institute of Technology

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http://www.amaatouq.com/   Cambridge, MA

Research Interests: collective intelligence, cooperation, computational social science, metascience, research methods

ACADEMIC APPOINTMENTS

Sloan School of Management, MIT, Cambridge, MA
- *Affiliate professor at the Institute for Data, Systems, and Society*   2024 to present
- *Douglas Drane Career Development Assistant Professor in Information Technology and Management*   2021 to present
- *Affiliate professor at the Center for Computational Engineering*   2020 to present
- *Assistant Professor of Information Technology*   2019 to present

Sociology Department, University of Chicago, Chicago, IL
- *Visiting Scholar, Knowledge Lab*   2021

The Wharton School, University of Pennsylvania, Philadelphia, PA
- *Visiting Scholar, Computational Social Science Lab*   2021

EDUCATION

PhD   **Massachusetts Institute of Technology**, Cambridge, MA   June 2019
Computational Science and Engineering
Committee: Alex Pentland (chair), Duncan J. Watts, Serguei Saavedra, John Williams

MS   **Massachusetts Institute of Technology**, Cambridge, MA   June 2016
Computational Science and Engineering
Advisor: Olivier de Weck

MS   **Massachusetts Institute of Technology**, Cambridge, MA   June 2016
Media Arts & Sciences (MIT Media Lab)
Advisor: Alex Pentland

BS   **University of Southampton**, Southampton, UK   May 2012
School of Electronics and Computer Science

RESEARCH EXPERIENCE

Microsoft Research, New York City, New York   May 2018–Aug 2018
Doctoral Research Intern, Computational Social Science lab

Massachusetts Institute of Technology, Cambridge, MA   Sept 2014–June 2019
Graduate Research Assistant, Human Dynamics Group

Massachusetts Institute of Technology, Cambridge, MA   Sept 2015–June 2018
Data Science Researcher, Connection Science

King Abdulaziz City for Science & Technology, Riyadh, KSA   Dec 2012–Aug 2014
Research Specialist, Center for Complex Engineering Systems

TEACHING EXPERIENCE

Massachusetts Institute of Technology, Cambridge, MA
- Metascientific Examination of Social & Behavioral Sciences   [SP24]
- IT Essentials - Foundations of Digitization   [F22, F23]
- Doctoral Seminar in Computational Social Science   [SP20, SP21]
- Action Learning Seminar on Analytics & Machine Learning   [F19 - F23]
- Social Physics: Computational Theory of Human Behavior   [F16]

HONORS AND AWARDS

MIT Jeptha H. and Emily V. Wade Award (Research Grant: $90,000)   2023
Selected as one of the winners of the Jeptha H. and Emily V. Wade Award for the project
"Integrative Experimentation in the Social and Behavioral Sciences."

MIT Jeptha H. and Emily V. Wade Award (Research Grant: $75,000)   2022
Selected as one of the winners of the Jeptha H. and Emily V. Wade Award for the project
"High-Throughput Experimentation in Social and Behavioral Science."

Toyota Research Institute (Research Grant: $1,125,000)   2021
Co-PI (with Tom Malone and Daniela Rus) on a grant for "How can we create
superintelligent human-computer groups?"

SAGE (Research Grant: $20,000)   2021
Winner of the 2021 SAGE Concept Grant, which funds new technological solutions that
support the adoption, development, and application of emerging research methods.

ACM Collective Intelligence Conference (Inspiring Paper Award)   2021
Winner of the Most Inspiring Research Paper Award at the ACM Collective Intelligence
Conference 2021 for our paper "Algorithmically Mediating Communication to Enhance
Collective Decision-Making in Online Social Networks."

Alfred P. Sloan Foundation (Research Grant: $400,000)   2020
Co-PI (with Duncan J. Watts) on a grant for "Scaling up experimental social, behavioral, and economic science."

Best of the arXiv (Award)   2018
The Best of the Physics arXiv (week ending May 26, 2018), MIT Technology Review (for "The Wisdom of the Network: How Adaptive Networks Promote Collective Intelligence").

Fragile Families Challenge (Award)   2017
Led the team that won the top-scoring submission in three categories (out of six) in the Fragile Families Challenge (FFC), a predictive modeling competition that received over 3,000 submissions from more than 150 international teams.

Russell Sage Foundation (Research Grant: $8,000)   2017
Awarded by the Russell Sage Foundation in support of running an online experiment on Amazon Mechanical Turk as part of the Summer Institute in Computational Social Science.

Russell Sage Foundation (Travel & Participation Grant)   2017
Awarded a travel and participation grant by the Russell Sage Foundation to the Summer Institute in Computational Social Science at Princeton University.

Joachim Herz Stiftung (Travel & Participation Grant)   2016
Awarded travel and participation grant by Joachim Herz Stiftung to the Summer Institute on Bounded Rationality at the Max Planck Institute.

King Abdulaziz City for Science and Technology (Scholarship)   2014
Awarded a full graduate (MS & PhD) scholarship from the King Abdulaziz City for Science and Technology.

Bicoastal Datafest (Award)   2013
Awarded the "Best in Innovation" prize at the Bicoastal (Stanford and Columbia) Datafest.

Ministry of Education (Scholarship)   2012
Awarded a full undergraduate scholarship from the Ministry of Education in Saudi Arabia.

PROFESSIONAL MEMBERSHIP AND ACTIVITIES

Memberships: Academy of Management, Association for Computing Machinery (ACM).

Peer-Reviewed Articles for: *Science, Nature, Proceedings of the National Academy of Sciences, American Journal of Sociology (AJS), Management Science, Science Advances, Collective Intelligence Journal, PNAS Nexus, ACM SIGCHI Conference on Human Factors in Computing Systems (CHI), Philosophical Transactions of the Royal Society, Journal of the Royal Society Interface, IEEE Computer, Socius: Sociological Research for a Dynamic World*.

PUBLICATIONS

Full publication list can be found on [Google Scholar](#).

Journal Publications

1. [How large language models can reshape collective intelligence](#) (2024)
   - JW Burton, EL Lopez-Lopez, S Hechtlinger, Z Rahwan, S Aeschbach, MA Bakker, JA Becker, A Berditchevskaia, J Berger, L Brinkmann, L Flek, SM Herzog, SS Huang, S Kapoor, A Narayanan, A Nussberger, T Yasseri, P Nickl, A Almaatouq, U Hahn, RH Kurvers, S Leavy, I Rahwan, D Siddarth, A Siu, AW Woolley, DU Wulff, R Hertwig
   - *To appear in Nature Human Behavior*

2. When Are Combinations of Humans and AI Useful? (2024)
   - M Vaccaro, A Almaatouq, T Malone
   - *To appear in Nature Human Behavior*
   - https://arxiv.org/abs/2405.06087

3. [Algorithmically Mediating Communication to Enhance Collective Decision-making in Online Social Networks](#) (2024)
   - JW Burton, A Almaatouq, M Amin Rahimian, and U Hahn
   - *Collective Intelligence 3, no. 2*

4. [Beyond Playing 20 Questions with Nature: Integrative Experiment Design in the Social and Behavioral Sciences](#) (2024)
   - A Almaatouq, TL Griffiths, JW Suchow, ME Whiting, J Evans, and DJ Watts
   - *Behavioral and Brain Sciences, 47, e33*
   - [Replies to commentaries on beyond playing 20 questions with nature](#)

5. [The Effects of Group Composition and Dynamics on Collective Performance](#) (2023)
   - A Almaatouq, M Alsobay, M Yin, and DJ Watts.
   - *Topics in Cognitive Science, 16(2), 302-321*

6. [The Distribution of Initial Estimates Moderates the Effect of Social Influence on the Wisdom of the Crowd](#) (2022)
   - A Almaatouq, M Amin Rahimian, JW Burton, and A Alhajri
   - *Scientific Reports 12, 16546*

7. [Task Complexity Moderates Group Synergy](#). (2021)
   - A Almaatouq, M Alsobay, M Yin, and DJ Watts.
   - *Proceedings of the National Academy of Sciences 118(36), e2101062118.*

8. [Screening Diabetic Retinopathy Using an Automated Retinal Image Analysis System in Independent and Assistive Use Cases in Mexico: Randomized Controlled Trial](#) (2021)
   - A Noriega, D Meizner, D Camacho, J Enciso, H Quiroz-Mercado, V Morales-Canton, A Almaatouq, and A Pentland.
   - *JMIR Formative Research, 5(8), e25290.*

9. [Empirica: A Virtual Lab for High-Throughput Macro-Level Experiments](#) (2021)
   - A Almaatouq, J Becker, J Houghton, N Paton, DJ Watts, and M Whiting.
   - *Behavior Research Methods, 53, 2158–2171.*

10. [Adaptive Social Networks Promote the Wisdom of Crowds](#) (2020)
    - A Almaatouq, A Noriega, P Krafft, A Alotaibi, M Moussaid, and A Pentland.
    - *Proceedings of the National Academy of Sciences, 117(21), 11379–11386.*

11. [Measuring the Predictability of Life Outcomes with a Scientific Mass Collaboration](#) (2020)
    - M Salganik, I Lundberg, A Kindel, C Ahearn, K Al-Ghoneim, A Almaatouq, et al.
    - *Proceedings of the National Academy of Sciences, 117(15), 8398–8403.*

12. [Evidence for In-Group Selection amongst Amazon Mechanical Turk Workers](#) (2019)
    - A Almaatouq, P Krafft, D Rand, and A Pentland.
    - *Social Psychological and Personality Science, 11(2), 151–159.*

13. [Winning Models for GPA, Grit, and Layoff in the Fragile Families Challenge](#) (2019)
    - DE Rigobon, E Jahani, Y Suhara, K AlGhoneim, A Pentland, and A Almaatouq.
    - *Socius: Sociological Research for a Dynamic World, 5.*

14. [Dynamical Networks of Influence in Small Group Discussions](#) (2018)
    - M Moussaïd, A Noriega, and A Almaatouq.
    - *PloS ONE, 13(1), e0190541.*

15. [Poor Perception of Friendship Ties Limits the Ability to Promote Behavioral Change](#) (2016)
    - A Almaatouq, L Radaelli, A Pentland, and E Shmueli.
    - *PloS ONE, 11(3), p.e0151588.*

16. [If It Looks Like a Spammer and Behaves Like a Spammer, It Must Be a Spammer: Analysis and Detection of Microblogging Spam Accounts](#) (2016)
    - A Almaatouq, E Shmueli, M Nouh, A Alabdulkareem, M Alsaleh, V Singh, A Alfaris, and Pentland.
    - *International Journal of Information Security (IJIS), 15, 475–491.*

Conference Papers

1. [Language Models as Tools for Research Synthesis and Evaluation](#) (2024)
   - R NA and A Almaatouq
   - *ICML 2024 AI for Science Workshop*

2. [Impact of Model Interpretability and Outcome Feedback on Trust in AI](#) (2024)
   - D Ahn, A Almaatouq, M Gulabani, K Hosanagar
   - *Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI '24)*

3. [Algorithmically Mediating Communication to Enhance Collective Decision-Making in Online Social Networks](#) (2021)
   - JW Burton, U Hahn, A Almaatouq, MA Rahimian.
   - *ACM Collective Intelligence Conference.*

4. [Rewiring the Wisdom of the Crowd](#) (2021)
   - JW Burton, A Almaatouq, MA Rahimian, U Hahn.
   - *Proceedings of the Annual Meeting of the Cognitive Science Society, (43), 1802–1808.*

5. [Mobile Communication Signatures of Unemployment](#) (2016)
   - A Almaatouq, F Prieto-Castrillo, and A Pentland.
   - *International Conference on Social Informatics, 407–418.*

6. [The Role of Reciprocity, and Directionality of Friendship Ties in Promoting Behavioral Change](#) (2016)
   - A Almaatouq, L Radaelli, A Pentland, E Shmueli.
   - *Social Computing, Behavioral-Cultural Modeling, and Prediction, 33–41.*

7. [Analyzing Human Communication, and Information Sharing Behavior During Extreme Events](#) (2014)
   - F Aleissa, R Alnasser, A Almaatouq, K Jamshaid, F Alhason, M González, A Alfaris.
   - *ACM Learning about Emergencies from Social Information (LESI'14), 33–41.*

8. [The City Browser: Utilizing Massive Call Data to Infer City Mobility Dynamics](#) (2014)
   - F Alhasson, A Almaatouq, K Greco, R Campari, A Alfaris, and C Ratti.
   - *ACM Urban Computing Workshop (UrbComp'14).*

9. [Twitter: Who Gets Caught? Observed Trends in Social Micro-blogging Spam](#) (2014)
   - A Almaatouq, A Alabdulkareem, M Nouh, E Shmueli, M Alsaleh, V Singh, A Alfaris, and A Pentland.
   - *ACM Web Science Conference (WebSci'14), 33–44.*

10. *[Social Information Leakage: Effects of Awareness, and Peer Pressure on User Behavior](#)* (2014)
    - M Nouh, A Almaatouq, A Alabdulkareem, V Singh, and E Shmueli.
    - *The 16th International Conference on Human-Computer Interaction, 352–360.*

11. [Malicious Activity Detection System in Complex Environments](#) (2014)
    - A Almaatouq, Alabdulkareem, M Nouh, Alsaleh, Alarifi, Sanchez, Alfaris, and J Williams.
    - *The Security, Privacy, and Content Protection Conference.*

12. [The Influence of Social Norms on Synchronous vs Asynchronous Communication Technologies](#) (2013)
    - A Almaatouq, F Alhasoun, R Campari, and A Alfaris.
    - *1st ACM International Workshop on Personal Data Meets Distributed Multimedia, 39–42.*

Technical Reports

1. [Scaling up Experimental Social, Behavioral, and Economic Science](#) (2021)
   - A Almaatouq, J Becker, M Bernstein, R Botto, E Bradlow, E Damer, A Duckworth, T Griffiths, J Hartshorne, D Lazer, E Law, M Liu, JN Matias, D Rand, M Salganik, E Satlof-Bedrick, M Schweitzer, H Shirado, JW Suchow, S Suri, M Tsvetkova, DJ. Watts, M Whiting, and M Yin.

Other Publications

1. [Mapping the Murky Waters: The Promise of Integrative Experiment Design](#) (2023)
   - A Almaatouq
   - Collective Impact Virtual Salon

2. [Which tasks are best for teams and which should be tackled solo?](#) (2021)
   - A Almaatouq and DJ. Watts.
   - Quartz at Work.

3. [Dynamic Networks Improve Remote Decision-Making](#) (2020)
    - A Almaatouq and A Pentland.
    - MIT Sloan Management Review.

Pre-prints or Under Review

1. The Task Space: A Multidimensional Representation of Team Tasks
    - H Xinlan, L Gandhi, ME Whiting, DJ Watts, and A Almaatouq
    - R&R *Management Science*
    - https://osf.io/preprints/psyarxiv/543sz/

2. Searching for Practical Social Technologies
    - NH Rim, A Almaatouq, and J Evans
    - R&R in *Nature Human Behavior*

3. Network Structures of Collective Intelligence: Contingent Benefits of Group Discussion
    - J Becker, A Almaatouq, A Horvat.
    - Under Review in *Science Advances*
    - arXiv:2009.07202

In Preparation (Drafts)

1. The Heterogeneous Effects of Costly Peer Punishment Across Cooperative Settings
    - M Alsobay, DG Rand, DJ Watts, and A Almaatouq
2. The Task Space Conditions the Emergence of Group Synergy
    - M Whiting, H Xinlan, DJ Watts, and A Almaatouq
3. Does Reading the Literature Improve One's Ability to Predict the Effects of Interventions?
    - R Na, DJ Watts, R Willer, and A Almaatouq

INVITED TALKS AND LECTURES

Integrative Experiment Design in the Social & Behavioral Sciences
- *The Diverse Intelligences Summer Institute, Scotland (07/24)*
- *School of Collective Intelligence, Ben Guérir, Morocco (05/24)*
- *Organizational Behavior Seminar, Stanford University (3/24)*
- *Institute for Analytical Sociology, Norrköping, Sweden (3/24)*
- *Roman Family Center for Decision Research, Booth School of Business (4/24)*

Beyond Playing 20 Questions with Nature.
- *Bids for Scale in Psychological Science, Stanford University (3/24)*
- *Winter Institute in Computational Social Science, NYU-AD (1/24)*
- *London Judgement and Decision Making Seminar, University College London (12/23)*
- *Stanford Polarization and Social Change Lab, Stanford University (10/23)*
- *Summer Institute in Computational Social Science, University of Edinburgh (6/23)*
- *Computational Social Science Society of the Americas, Online (05/23)*
- *Philosophy of Behavior Analysis Journal Club, Online (05/23)*
- *Max Planck Institute for Evolutionary Biology, Plön, Germany (03/23)*
- *Knowledge Lab, University of Chicago.* (11/21)
- *MIT Computational Social Science Lunch, MIT.* (10/21)

In Search of Synergy in the Task Space using Integrative Experiment Design.
- *ACM Collective Intelligence Conference, Max Planck Institute (online).* (10/22)
- *Measuring Belief Systems in Networked Communities, Princeton University.* (10/22)
- *Summer Institute in Computational Social Science, Hong Kong.* (05/22)
- *School of Collective Intelligence, Ben Guérir, Morocco.* (05/22)
- *Max Planck Institute for Human Development, Berlin, Germany.* (04/22)
- *Psychological & Brain Sciences, Dartmouth College.* (03/22)
- *Organizational Behavior, Tepper School, Carnegie Mellon University.* (11/21)
- *The Computational Social Science Workshop, University of Chicago.* (10/21)
- *Data Colada Seminar Series, Virtual Seminar.* (10/21)
- *Summer Institute in Computational Social Science, Bologna, Italy.* (06/21)

High-Throughput Behavioral Science Using Virtual Labs.
- *International Conference on Computational Social Science, UChicago.* (07/22)
- *Workshop on Scaling Cognitive Science, Princeton University.* (12/19)
- *Summer Institute in Computational Social Science, Princeton University.* (10/19)
- *MIT Quest for Intelligence, Workshop on Collective Intelligence, MIT.* (10/19)

A Grounded Theory of Group Tasks.
- *GraphEx, MIT Lincoln Laboratory.* (05/21)
- *System Dynamics Seminar Series, MIT.* (03/21)
- *MIT Computational Social Science Lunch, MIT.* (02/21).

When Social Influence Promotes the Wisdom of Crowds.
- *Max Planck Institute for Human Development.* (08/20)

Adoption of Predictive Analytics: Impact of Model Interpretability.
- *MIT Behavioral Lab Seminar.* (11/20)
- *MIT Initiative on the Digital Economy, Virtual Seminar.* (04/20)

How Adaptive Communication Networks Promote Collective Intelligence.
- *The Computational Social Science Workshop, University of Chicago.* (11/19)
- *New York University Abu Dhabi.* (12/18)
- *The Wharton School, The University of Pennsylvania.* (12/18)