

Mohammed Alsobay

✉ mosobay@mit.edu

☎ (+1) 617-710-7032

🌐 <https://www.malsobay.com/>

RESEARCH INTERESTS

- Computational social science
- Collective intelligence
- Human-AI interaction
- Machine learning

EDUCATION

Massachusetts Institute of Technology, Cambridge, MA 2020–2025 (expected)
Ph.D. Candidate, Information Technology

- *Advisor*: Prof. Abdullah Almaatouq
- *Selected coursework*: Econometrics, Microeconomics, Game Theory, Machine Learning, Machine Learning for Causal Inference, Computational Cognitive Science, Principles of Rationality and Irrationality, Computational Models in Social and Behavioral Sciences

King Abdullah University of Science and Technology, Thuwal, Saudi Arabia 2017
M.S., Applied Mathematics and Computational Science

- *Advisor*: Prof. Marc Genton, Spatio-temporal Statistics Group
- *Selected coursework*: Probability & Random Processes, Linear Models, Numerical Optimization, Spatial Statistics

Massachusetts Institute of Technology, Cambridge, MA 2016
B.S., Chemical Engineering (minor in Energy Studies)

RESEARCH EXPERIENCE

MIT Center for Collective Intelligence

Researcher

Sept 2020 - Current

- Exploring how people and computers can be connected so that—collectively—they act more intelligently than any person, group, or computer

Empirica (Open-source Software for Virtual Labs [\[link\]](#))

Researcher, Core Contributor, and Community Manager

Sept 2020 - Current

- Integrate researcher feedback (29+ different teams across 17 institutions since 2020) and primary research on digital experimentation into product roadmap
- Incorporate concepts of adaptive experiment design, such as Bayesian optimization, into the platform
- Created and currently manages the Empirica Developer Network and community spotlight blog

Doyle Lab (MIT)

Undergraduate Researcher - Energy Engineering Projects Lab

Cambridge, MA

Feb - May 2015

- Designed and executed experiments investigating nanoemulsion formation and stability, and presented findings to an audience of 50+

Strano Lab (MIT)

Undergraduate Researcher

Cambridge, MA

Sept - Dec 2014

- Designed and executed an experiment to investigate propagation of 2-D thermopower waves

PUBLICATIONS

- Abdullah Almaatouq, **Mohammed Alsobay**, Ming Yin, Duncan J. Watts. “The Effects of Group Composition and Dynamics on Collective Problem-Solving”. *Topics in Cognitive Science*, 2023.
- Abdullah Almaatouq, **Mohammed Alsobay**, Ming Yin, Duncan J. Watts. “Task Complexity Moderates Group Synergy”. *Proceedings of the National Academy of Sciences*, 2021.

RESEARCH IN
PROGRESS
(* = LEADING
PROJECT)

- **The effect of social information on trust and efficacy in AI-assisted prediction***
with Ming Yin, Abdullah Almaatouq
- **Mapping the effect of altruistic punishment on cooperation***
with Abdullah Almaatouq, David G. Rand, and Duncan J. Watts
- **How do people learn to write effective prompts for generative models?**
with Benjamin Manning, Hong-Yi Tu Ye, Joe Zhang, Eaman Jahani, and David Holtz
- **Exploring the effect of LLM personality manipulation on human-AI negotiation***
with David Fang, Abdullah Almaatouq, and Jared Curhan

RESEARCH
FEATURED IN
MEDIA

- **Is teamwork always the most effective way to complete tasks?**
World Economic Forum, 2021 [\[link\]](#)
- **When two heads aren't better than one**
MIT Sloan School of Management News, 2021 [\[link\]](#)
- **Which tasks are best for teams and which should be tackled solo?**
Quartz (Op-Ed), 2021 [\[link\]](#)

TALKS &
TUTORIALS

- **9th International Conference on Computational Social Science (IC²S² 2023)**
 - Plenary talk: “Mapping the Effect of Altruistic Punishment on Cooperation”
 - Tutorial on “Creating multiplayer, interactive online experiments with Empirica”
- **Measuring Belief Systems in Networked Communities (Princeton University, 2022)**
“Integrative, High-throughput Experimentation to Explore Social Cooperation”
- **8th International Conference on Computational Social Science (IC²S² 2022)**
Tutorial on “Computational Social Science Tools for High-throughput Digital Experimentation”
- **MIT Conference on Digital Experimentation (CODE 2021)**
“Collective Problem-Solving of Groups Across Tasks of Varying Complexity”
- **MIT Computational Social Science Lunch (10/2021)**
“Collective Intelligence Across Tasks of Varying Complexity”
- **PyData Riyadh (07/2021)**
“Adaptive Data Collection”

TEACHING
EXPERIENCE

- **Graduate Teaching Assistant** FA22, FA23
15.561 Information Technology Essentials, Prof. Abdullah Almaatouq, MIT
- **Analytics Lab Mentor** FA22, FA23
15.572 Action Learning Seminar on Analytics, Machine Learning, and The Digital Economy
Profs. Abdullah Almaatouq and Sinan Aral, MIT

MENTORSHIP

- **Jasmine Chen (MIT Undergraduate Research Opportunities)** 2022
Project title: “High-throughput Experimentation With Empirica to Explore Social Cooperation in Public Goods Games”
- **Donald Liu (MIT Undergraduate Research Opportunities)** 2022
Project title: “Design and Deployment of an Interactive, Multiplayer Experiment to Explore Group Communication and Problem-solving”

HONORS AND
AWARDS

- **SACM Excellence Award** 2014-2016
5-time awardee for academic excellence by the Saudi Arabian Cultural Mission
- **King Abdullah Scholarship** 2012
A full-tuition undergraduate scholarship awarded by the Saudi Arabian Cultural Mission
- **KAUST Gifted Student Program Scholar** 2011
An undergraduate living stipend awarded by KAUST to ~100 students annually
- **Intel International Science and Engineering Fair Finalist** 2011

PROFESSIONAL **Mozn**

Riyadh, Saudi Arabia

EXPERIENCE **Senior Data Scientist**

2019–2020

- Led the development of a SaaS financial compliance product (KYC and fraud detection) utilizing Arabic NLP, with 1M+ API calls processed within 6 months of launch
- Led a team of 2 data scientists in developing a risk-based system to aid officials in deciding to inspect incoming food shipments
- Established Mozn's R&D efforts in Arabic NLP and OCR by securing support internally and hiring a research-focused team

Data Scientist

2017–2019

- Joined as the 1st data scientist and 3rd employee; hired technical talent of varying seniority across domains, growing to 70+ employees and 4 direct reports in 2020
- Identified and validated \$9+ million annually in data-driven operational savings for a national healthcare agency

McKinsey & Company

Dubai, United Arab Emirates

Summer Business Analyst

May - Aug 2015

- Received a full-time return offer above standard entry level
- Analyzed market demand data to detail product strategy for a government initiative targeting 3+ million people

Navigant Consulting

Burlington, MA

Emerging Energy Technologies Analyst - MIT Externship Program

Jan 2015

- Conducted a 5-year financial forecast and catalogue of 750+ subsidiaries of a major manufacturer
- Built an 8760-hour model to estimate the feasibility of large-scale solar energy projects

Schlumberger

Dhahran, Saudi Arabia

Research & Development Intern

May - Aug 2014

- Designed and conducted experiments to investigate interfacial tension phenomena in model oils, with rotations in the commercial downhole sample testing lab and Manifa oil field

REFERENCES

Abdullah Almaatouq

Douglas Drane Career Development Professor in Information Technology
Massachusetts Institute of Technology
Email: amaatouq@mit.edu
<http://www.amaatouq.com/>

Duncan J. Watts

Stevens University Professor and Penn Integrates Knowledge University Professor
University of Pennsylvania
Email: djwatts@seas.upenn.edu
<https://duncanjwatts.com/>

SKILLS &
TRAINING

- **Languages/Frameworks/Tools:** Comfortable: Python, R, Linux, Git, AWS services — Familiar: SQL, Spark, Ansible, Airflow, Docker
- **Data Science in Python:** pandas, NumPy, scikit-learn, statsmodels, Keras, Flask, Plotly/Dash, PySpark, spaCy, Ax
- **Gaussian Process Summer School (2021):** 3-day workshop organized by the University of Sheffield for researchers on the theory and practical use of Gaussian process models
- **Full Stack Deep Learning Bootcamp (2018):** 3-day program organized by industry leaders at UC Berkeley and OpenAI focused on deploying deep learning at scale