

- Research interests:** Labor economy, Statistical inference, Machine learning, Network science, Collective intelligence
- PhD student in Computational Science & Engineering at the Massachusetts Institute of Technology (MIT).
  - Research Assistant at the MIT Media Lab (Human Dynamics Group)
  - Research specialist at the Center for Complex Engineering Systems (CCES) at KACST and MIT.

## EDUCATION

- PhD** **Massachusetts Institute of Technology (MIT)**, Cambridge, MA, USA  
2016–now *Center for Computational Engineering (CCE)*  
Computational Science & Engineering  
Areas of Study: Cooperation models & mechanisms, Collective intelligence, Econometrics, Labor economy, Computational Cognitive Science, Evolutionary dynamics
- MSc** **Massachusetts Institute of Technology (MIT)**, Cambridge, MA, USA  
2014–2016 *Center for Computational Engineering (CCE)*  
Computation for Design & Optimization  
Thesis: Complex Systems Prospective on the Labor Market  
Areas of Study: Numerical methods, Scientific computing, Optimization, Networks & complex systems, Mathematical modeling
- MSc** **Massachusetts Institute of Technology (MIT)**, Cambridge, MA, USA  
2014–2016 *The Media Lab (Human Dynamics Group)*  
Media Arts and Sciences  
Advisor: Professor [Alex ‘Sandy’ Pentland](#)  
Areas of Study: Behavioral Economics, Statistical analysis, Machine learning, Entrepreneurship
- BSc** **University of Southampton**, Hampshire, UK  
2009–2012 *School of Electronics and Computer Science (ECS)*  
Areas of Study: Software Engineering, Information Retrieval, Recommender Systems, Distributed & Parallel Databases.
- International Foundation Programme** **University of Reading**, Berkshire, England, UK  
2008–2009 *Computer Science*  
Courses: Pure mathematics, Academic skills, English, Further mathematics & computer science

## EXPERIENCE

### Research

- MIT – Human Dynamics Group** **Graduate Research Assistant**  
2014–present Working primarily on mathematical modeling, data mining, machine learning and multimodal analysis issues related to studying the hidden patterns in large-scale datasets of human behavior, collaboration, and communication.
- MIT – Connection Science** **Data Science Researcher**  
2014–present Building better societies through big data insights and network science applied to behavior change at scale. Launching company, community and country-scale solutions in domains such as health, urban systems, financial services, and organizational innovation.
- Center for Complex Engineering Systems** **Research Specialist**  
2012–present Developing tools and frameworks to gain insight into behavioral patterns within large datasets as part of the City Dynamics and Cyber Security Initiative projects.
- MIT – Engineering Systems Division** **Research Affiliate**  
2013–2014 Working on collaborative research projects with the Geospatial Data Center (GDC) and the Media Lab to address issues related to cyber security and data privacy.

## CERTIFICATES & COURSES

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- SICSS** Summer Institute in Computational Social Science  
June-July 2017 Princeton University, Princeton, New Jersey, USA  
Topics included text as data, digital field experiments, non-probability sampling, mass collaboration, and ethics.
- Homo Heuristicus** Summer Institute on Bounded Rationality  
June-July 2016 Max Planck Institute for Human Development, Berlin, Germany  
The aim of the Summer Institute is to provide an interdisciplinary platform for sharing knowledge and discussing the importance and application of simple solutions to complex problems.
- Social Data and Networks** MIT, USA  
July 2013 the course provides an in-depth, state-of-art analytic view towards making use of social networks, behavioral models, and data processing or mining a reality.

## AWARDS & HONORS

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- Experiment pilot** Awarded \$2500 by the Russell Sage Foundation in support of piloting an experiment on Amazon  
2017 Mechanical Turk.
- SACM Award** Eight Saudi Arabian Cultural Mission scholarship achievement rewards for graduate-level academic excellence.  
2014-2017
- Travel & Participation** Awarded a travel and participation grant by the Russell Sage Foundation to the Summer Institute  
2017 in Computational Social Science at Princeton University.
- Travel & Participation** Awarded a travel and participation grant by the Joachim Herz Stiftung to the Summer Institute  
2016 on Bounded Rationality at the Max Planck Institute.
- KACST Scholarship** Awarded full graduate scholarship from the King Abdulaziz City for Science and Technology.  
2014-2019
- Bicoastal Datafest** Bicoastal (Stanford & Columbia) Datafest “Best In Innovation” prize.  
January 2013
- SACB Award** Four Saudi Arabian Cultural Bureau scholarship achievement rewards for undergraduate-level academic excellence.  
2008-2012
- KA Scholarship** King Abdullah full Scholarship: covers tuition and living expenses for undergraduate studies.  
2008-2012

## SKILLS

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- Proficient in the Python Language for data analysis; good knowledge of MATLAB and R.
- Experience in working with large datasets, using distributed computing tools.
- Well versed in Cloud Computing technologies to automate cluster deployments and continuous integration for data-intensive applications.
- Good knowledge of various database query languages and database designs.
- Familiarity with a variety of tools and languages including, HTML, Javascript, PHP, Ruby on Rails, L<sup>A</sup>T<sub>E</sub>X and Git.

## TALKS & TUTORIALS

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- June 2017 *The Wisdom of the Dynamic Network*. Summer Institute in Computational Social Science (June 2017), University of Princeton, Princeton, New Jersey, USA.
- November 2016 *Mobile Communication Signatures of Unemployment*. International Conference on Social Informatics, Bellevue, Washington, USA.
- July 2016 *Are you your friends' friend? Poor Perception of Friendship Ties Limits the Ability to Promote Behavioral Change*. Summer Institute on Bounded Rationality (July 2016), Max Planck Institute for Human Development, Berlin, Germany.
- June 2015 *Beyond the Theory of Complexity: Empirical Study of the Economic Complexity Index*. Workshop on Information Network (WIN '15), NYC, New York, USA.

- June 2014 *Reaction of Human Communities to Impulsive External Perturbations*  
Computational Approaches to Social Modeling (ChaSM '14), Bloomington, Indiana, USA.
- June 2014 *Twitter: Who gets Caught?*  
ACM Web Science Conference (WebSci '14), Bloomington, Indiana, USA.
- January 2014 *Predictive Modeling for Malicious Activity Detection*  
Consumer Communications and Networking Conference, Las Vegas Nevada, USA.
- November 2013 *Introduction to Applied Machine Learning (2-hour tutorial)*  
The 2nd Saudi International Conference on Information Technology, KACSTIT  
([Slides](#), [Notebooks](#))
- November 2013 *City Dynamics: Mobility and Beyond*  
King Abdulaziz City for Science and Technology, Riyadh, Saudi Arabia

## PUBLICATIONS

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### Peer Reviewed

- [11] **A. Almaatouq** “*Mobile Communication Signatures of Unemployment*”. *International Conference on Social Informatics*. Nov 2016: pp 407-418.
- [10] **A. Almaatouq** “*Complex Systems and a Computational Social Science Perspective on the Labor Market*”. *Master Thesis, Massachusetts Institute of Technology*. June 2016.
- [9] **A. Almaatouq**, L. Radaelli, A. Pentland & E. Shmueli. “*The Role of Reciprocity and Directionality of Friendship Ties in Promoting Behavioral Change*”. *Social computing, behavioral-cultural modeling and prediction*. Springer Berlin Heidelberg. June 2016.
- [8] **A. Almaatouq**, L. Radaelli, A. Pentland & E. Shmueli. “*Are You Your Friends' Friend? Poor Perception of Friendship Ties Limits The Ability to Promote Behavioral Change*”. *PLoS ONE* 11(3): e0151588. doi: 10.1371/journal.pone.0151588
- [7] **A. Almaatouq**, E. Shmueli, M. Nouh, A. Alabdulkareem, M. Alsaleh, V. Singh, A. Alfariis & A. Pentland. “*If It Looks Like a Spammer and Behaves Like a Spammer, It Must Be a Spammer: Analysis and Detection of Microblogging Spam Accounts*”. *International Journal of Information Security (IJIS)*. 2016: 1-17.
- [6] F. Aleissa, R. Alnasser, **A. Almaatouq**, K. Jamshaid, F. Alhasoun, M. González & A. Alfariis. “*Wired to Connect: Analyzing Human Communication and Information Sharing Behavior during Extreme Events*”. *Proc. of the ACM Learning about Emergencies from Social Information (LESI'14)*, August 24-27, 2014. New York, USA
- [5] F. Alhasson, **A. Almaatouq**, K. Greco, R. Campari, A. Alfariis & C. Ratti. “*The City Browser: Utilizing Massive Call Data to infer City Mobility Dynamics*”. *Proc. of the ACM Urban Computing Workshop (UrbComp'14)*, August 24-27, 2014. New York, USA. ( $\approx 20\%$  acceptance rate)
- [4] **A. Almaatouq**, A. Alabdulkareem, M. Nouh, E. Shmueli, M. Alsaleh, V. Singh, A. Alfariis & A. Pentland. “*Twitter: Who gets Caught? Observed Trends in Social Micro-blogging Spam*”. *Proc. of the ACM Web Science Conference (WebSci'14)*, June 23-26, 2014. Bloomington, Indiana, USA ( $\approx 20\%$  acceptance rate)
- [3] M. Nouh, **A. Almaatouq**, A. Alabdulkareem, V. Singh, & E. Shmueli. “*Social Information Leakage: Effects of Awareness and Peer Pressure on User Behavior*”. *Proc. of the 16th International Conference on Human-Computer Interaction, Heraklion, Crete, Greece, June 22-27, 2014*.
- [2] **A. Almaatouq**, A. Alabdulkareem, M. Nouh, M. Alsaleh, A. Alarifi, A. Sanchez, A. Alfariis, & J. Williams. “*A Malicious Activity Detection System Utilizing Predictive Modeling in Complex Environments*”. *Proc. of the CCNC - Security - Privacy and Content Protection, Las Vegas, Nevada 2014*.
- [1] **A. Almaatouq**, F. Alhasoun, R. Campari & A. Alfariis. “*The Influence of Social Norms on Synchronous versus Asynchronous Communication Technologies*”. in *Proc. of the 1st ACM international workshop on Personal data meets distributed multimedia (PDM '13)*. ACM, New York, NY, USA, 39-42.

- [1] A. Alabdulkareem, **A. Almaatouq**, V. Singh, J. Williams, A. Pentland & E. Shmueli. “*Behavioral Privacy in the Age of Personal Data Stores*”. **Submitted** to *PloS One*

In Preparation

- [4] M. Moussaïd<sup>1</sup>, A. Noriega & **A. Almaatouq** “*Dynamical Networks of Influence in Small Group Discussions*”.
- [3] **A. Almaatouq**, P. Krafft & A. Pentland. “*Workers Against the World: Evidence for In-Group Selection Amongst Amazon Mechanical Turk Workers*”.
- [2] **A. Almaatouq**, A. Alhajri, P. Krafft & A. Pentland. “*Modeling Collective Perceptual Estimation as a Distributed Inverse Bayesian Inferences*”.
- [1] A. Noriega, **A. Almaatouq** & A. Pentland. “*Wisdom of Dynamic Networks: Selective Social Learning and the Adaptive Wisdom of Crowds*”.

Abstracts / Posters

- [8] **A. Almaatouq**, A. Noriega & A. Pentland. “*Wisdom of Dynamic Networks: Selective Social Learning and the Adaptive Wisdom of Crowds*”. Collective Intelligence Conference, NYU, New York, USA. June 2017
- [7] **A. Almaatouq**, A. Noriega & A. Pentland. “*Wisdom of Dynamic Networks: Selective Social Learning and the Adaptive Wisdom of Crowds*”. Center For Computational Engineering Student Symposium, Massachusetts Institute of Technology, Cambridge, MA, USA. March 2017
- [6] **A. Almaatouq**, L. Radaelli, A. Pentland. & E. Shmueli. “*Are you your friends’ friend? Poor Perception of Friendship Ties Limits the Ability to Promote Behavioral Change*”. Summer Institute on Bounded Rationality, Max Planck Institute for Human Development, Berlin, Germany, July 2016.
- [5] M. Saveski & **A. Almaatouq**. “*Beyond the Theory of Complexity: Empirical Study of the Economic Complexity Index*”. Workshop on Information Networks (WIN’15), New York City, New York, USA, October, 2015.
- [4] **A. Almaatouq**, A. Pentland. & E. Shmueli. “*Are You Your Friends’ Friend?*”. International Conference on Computational Social Science (IC2S2), Finlandia Hall, Helsinki, Finland, Jun 8-11, 2015.
- [3] **A. Almaatouq**, A. Pentland & E. Shmueli. “*Are you your friend’s friend?: Reciprocity in Friendship Networks*”. Network Science X (NetSciX’15), Rio de Janeiro, Brazil, Jan 14-16, 2015.
- [2] **A. Almaatouq**, A. Pentland & E. Shmueli. “*If It Looks Like a Bot and Behaves Like a Bot, It Must Be a Bot*”. Network Science X (NetSciX’15), Rio de Janeiro, Brazil, Jan 14-16, 2015.
- [1] **A. Almaatouq**, E. Shmueli, V. Singh, A. Alfariis & A. Pentland. “*An Analysis of Twitter Spamming Behaviors*”. Network Science (NetSci’14), Berkeley, California, USA, Jun 2-6, 2014.