

# Aniko Hannak

ahannak@wu.at.ac

Assistant Professor  
Complexity Science Hub &  
Uni. of Economics and Business  
Vienna, Austria

## Research Interests

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**Algorithmic Auditing Systems:** design, deployment and scaling of auditing pipelines; quantifying the “filter bubble”; transparency and accountability of algorithmic systems; potential harmful effects of big data algorithms.

**Fairness in Algorithmically-aided Systems:** theoretical fairness definitions and guarantees; agent-based modeling and simulations; effects of interface design on inequality; adapting offline policy solutions to online systems.

**Measuring Inequality in Online Labor Markets:** impact of online labor markets on the labor economy; racial and gender discrimination; large-scale empirical analysis of employment related online platforms; combining qualitative and quantitative research; disentangling mechanisms behind discrimination.

**Ethics and Validity of Digital Trace Data:** bias and representativity problems of big data; privacy and security issues for users; ethical and legal considerations of working with digital trace data.

## Education

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### Ph.D. Computer Science

2010 – 2016

Northeastern University

Advisors: Alan Mislove and David Lazer

Thesis: Personalization in Online Services: Measurement, Analysis, and Implications

Defense: 06/19/2016, Boston

### B.S., Applied Math

2005 – 2010

Eotvos Lorand University, Hungary

Advisor: Katalin Vesztergombi

Thesis: Crossing Numbers and Related Problems of Unit Distances in the Plane

## Professional Experience

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### Postdoctoral Fellow

2016 – 2017

CNS at CEU, Budapest

Gendered Creative Teams project sponsored by the Intellectual Themes Initiative

### Visiting Researcher

2015

GESIS, Köln, Germany

Primary Collaborators: Markus Strohmaier, Claudia Wagner

In this collaboration with Computational Social Science Group at GESIS, we investigated the emergence of racial and gender inequalities in the context of online freelance marketplaces.

### Research Intern

2014

Prezi, Budapest, Hungary

In this 5 months internship with Prezi's 'Reuse' team I was responsible for first, collecting and analyzing user behavioral data (on a ~50 million user base) and second, leveraging these results to develop algorithms for better content search and content recommendation tools.

### Research Intern

2013

HP Labs, Social Computing Group

Mentors: Bernardo Huberman, Sitaram Asur

In this project I worked on developing data mining methods to measure consumer opinions from micro-blogging data. The final product allowed us to analyze consumer feedback in a live manner, detect possible crises, and have an overview on the temporal patterns of consumer sentiment.

**External Researcher**

**2011 - 2012**

**Maven Seven, Budapest, Hungary**

Principal Investigator: Albert-Laszlo Barabasi

The goal of the project I was involved in at Maven7 was to map and analyze the community of Hungarians living in Boston. We achieved an extensive understanding over the communities and cultural trends by combining online data collection with qualitative analysis.

## Conference and Workshop Papers

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All papers available at <http://ancsahannak.me/#publications>. Citation counts and other information available at <https://scholar.google.hu/citations?user=LBVvsn8AAAAJ>.

J. Wachs, B. Daroczy, **A. Hannak**, K. Pall, C. Riedl: And Now for Something Completely Different: Visual Novelty in an Online Network of Designers, Proceedings of the 10th ACM Conference on Web Science (WebSci'18), Amsterdam, May, 2018

E. Horvat, J. Wachs, R. Wang, **A. Hannak**: The Role of Novelty in Securing Investors for Equity Crowdfunding Campaigns, AAAI Conference on Human Computation and Crowdsourcing (HCOMP'18), Zurich, Switzerland, 2018

L. Chen, **A. Hannak**, R. Ma, C. Wilson: Investigating the Impact of Gender on Rank in Resume Search Engines, ACM Human Factors in Computing Systems [CHI18], Montreal, Canada, Apr. 2018

A Chakraborty, **A Hannak**, AJ Biega, KP Gummadi: Fair Sharing for Sharing Economy Platforms, FATREC Workshop on Responsible Recommendation at RecSys 2017, Como, Italy, Aug 2017

J. Wachs, **A. Hannak**, B. Daroczy and A. Voros: Why Do Men Get More Attention? Exploring Factors Behind Success in an Online Design Community, Proceedings of the 11th International AAAI Conference on Weblogs and Social Media (ICWSM'17), Montreal, Canada, May 2017

**A. Hannak**, C. Wagner, D. Garcia, A. Mislove, M. Strohmaier and C. Wilson: Bias in Online Freelance Marketplaces: Evidence from TaskRabbit and Fiverr, In Proceedings of the 20th ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW 2017), Portland, OR, February, 2017

C. Kliman-Silver, **A. Hannak**, D. Lazer, C. Wilson, A. Mislove, Location, location, location: The impact of geolocation on web search personalization, Proceedings of the 2015 ACM Conference on Internet Measurement Conference, Tokyo, Japan, Oct 2015

**A Hannak**, C Wagner, D Garcia, M Strohmaier, C Wilson, Bias in Online Freelance Marketplaces: Evidence from TaskRabbit, Proceedings of the Workshop on Data and Algorithm Transparency

**A. Hannak**, G. Soeller, D. Lazer, A. Mislove, C. Wilson: Measuring Price Discrimination and Steering on E-commerce Sites, In Proceedings of the 14th ACM/UNSENIIX Internet Measurement Conference (IMC'14), Vancouver Canada, November 2014

**A. Hannak**, D. Margolin, B. Keegan, I. Webers: Get back! You don't know me like that: The social mediation of fact-checking interventions in Twitter, In Proceedings of the 8th International AAAI Conference on Weblogs and Social Media (ICWSM'14), Ann Arbor, MI, June 2014

**A. Hannak**, P. Sapiezynski, A. Molavi Kakhki, B. Krishnamurthy, D. Lazer, A. Mislove, C. Wilson: Measuring Personalization of Web Search, Proceedings of the 22nd International World Wide Web Conference (WWW'13), Rio de Janeiro, Brazil, May 2013

**A. Hannak**, E Anderson, LF Barrett, S Lehmann, A Mislove, M Riedewald, Tweetin' in the Rain: Exploring Societal-scale Effects of Weather on Mood, Proceedings of the 6th International AAAI Conference on Weblogs and Social Media (ICWSM'12), Dublin, Ireland, June 2012

## Journals and Other Submissions

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A. May, J. Wachs, **A. Hannak**: Gender Differences in Participation and Reward on Stack Overflow, Empirical Software Engineering, Resubmitted after revision, Nov. 2018, arXiv:1811.11539

D. Margolin, **A. Hannak**, I. Weber: Political Fact-checking on Twitter: When Do Corrections Have an Effect? In the Journal of Political Communication, 1-24, Sept. 2017

**A. Hannak**, P. Sapieżyński, A. Molavi Khaki, D. Lazer, A. Mislove, C. Wilson, Measuring Personalization of Web Search, CoRR, abs/1706.05011, June 2017

A. Molavi, **A. Hannak**, A. Mislove, R. Sundaram: Mitigating Sybil attacks on content rating systems, ACM Symposium on Operating Systems Principles, Lisbon, Portugal, Oct 2011

## Funding and Awards

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Inequality in Online Labor Markets, Russel Sage Foundation, 2017-2019, Award number 92-17-03, \$113,628

Girls Who Code: Gender Differences in Behavior and Outcome on Stack Overflow, European Symposium on Societal Challenges in Computational Social Science, London, UK, Nov. 2017, **Best presentation award**

## Professional Service

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### Organizer

APEN, workshop at ICWSM	2018
Gendered Creative Teams Workshop, CEU, gcw-ceu.com	2017
Science Slam at the International Conference of Weblogs and Social Media	2015-present

### Program Committee Member

Conference on Fairness, Accountability, and Transparency [FAT*]	2018, 2019
"Web and Society" research paper track at the 27th World Wide Web Conference [WWW]	2018
Opinions, Personality, and Emotions in Social media (PEOPLE)	2018
International Conference on Computational Social Science [IC2S217]	2017
Computational Social Science Winter Symposium	2015-present
AAAI International Conference on Weblogs and Social Media (ICWSM)	2015-present
ACL Workshop on NLP and Social Dynamics [ACL-NLPSD]	2014

### Other Reviewing Experience

ACM Computer-Supported Cooperative Work [CSCW]	2017
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## Invited Talks

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**Human and Machine Bias** roundtable at the conference “Gender & Technology: How to debias the workplace”, Harvard Kennedy School, Women and Public Policy, Boston, May 2018

**How to Debunk the Filter Bubble**, Media Convention 2018, Berlin

**The Branching Pipeline: Understanding Gender Disparities Within and Across Fields**, European Symposium on Societal Challenges in Computational Social Science, London, UK, Nov. 2017

**Fair Sharing in Sharing Economy Platforms**, European Symposium on Societal Challenges in Computational Social Science, London, UK, Nov. 2017

**New Faces of Bias in Online Labor Markets**, Keynote Speaker at the Complex Networks conference, Dubrovnik, Croatia, March 2017

**Challenges of Measuring Inequality in Online Labor Markets**: Dagstuhl Seminar on Online Privacy and Web Transparency, Dagstuhl, Germany, Apr 2017

**Power of Digital Research**, Digital Methods Roundtable at the International Communication Association (ICA) 2016 Annual meeting, Fukuoka, Japan, 2016

## Teaching Experience

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<b>Lecturer</b>	<b>2018 Winter</b>	<b>WU, Wien</b>
Data Processing – Undergraduate level course		
<b>Lecturer</b>	<b>2017 Summer</b>	<b>Sardinia, Italy</b>
Summer School on Methods for Computational Social Science - Data collection methods and biases in digital trace data		
<b>Lecturer</b>	<b>2018 Winter</b>	<b>CEU, Budapest</b>
Data Management with Python – Masters level course		
<b>Lecturer</b>	<b>2015 Fall</b>	<b>AIT, Budapest</b>
Datamining – Undergraduate level course for American exchange students		
<b>Teaching Assistant</b>	<b>2011 Spring</b>	<b>Northeastern University</b>
Logic and Computation - introduction to formal logic for undergraduate students		
<b>Teaching Assistant</b>	<b>2010 Fall</b>	<b>Northeastern University</b>
Discrete Structures - introductory course to mathematics, logic, and computer science for undergraduates		

## Selected Press Coverage

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Studies Show Racial and Gender Discrimination Throughout the Gig Economy  
*Bloomberg*, November 22, 2016

Is the Gig Economy Rigged?  
*MIT Tech Review*, November 17, 2016

No one in control: The algorithms that run our lives  
*New Scientist*, February 4, 2015

Why You Can't Trust You're Getting the Best Deal Online  
*The Wall Street Journal*, October 23, 2014

If you use a Mac or an Android, e-commerce sites may be charging you more  
*The Washington Post*, November 3, 2014

Why Some People Pay More Than Others When Shopping Online  
*The Huffington Post*, November 6, 2014

Google's Searches Narrowing Our Experience  
*The Saturday Post*, June 7, 2014

## References

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### **Professor David Lazer**

Full Professor, Department of Political Science and College of Computer and Information Science, Northeastern University

Visiting Scholar, John F. Kennedy School of Government, Harvard University  
[davelazer@gmail.com](mailto:davelazer@gmail.com)

### **Professor Alan Mislove**

Assistant Professor, College of Computer and Information Science, Northeastern University  
[amislove@ccs.neu.edu](mailto:amislove@ccs.neu.edu)

### **Professor Markus Strohmaier**

Professor for Methods and Theories of Computational Social Sciences and –Humanities, RWTH Aachen University, HumTec Institute, Germany

Scientific Coordinator for Digital Behavioral Data, GESIS - Leibniz Institute for the Social Sciences, Cologne, Germany  
[markus.strohmaier@gesis.org](mailto:markus.strohmaier@gesis.org)

### **Professor Christo Wilson**

Assistant Professor, College of Computer and Information Science, Northeastern University  
[cbw@ccs.neu.edu](mailto:cbw@ccs.neu.edu)