Dr. Afra Mashhadi

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BRIEF BIO

I am a research scientist in the domain of Ubiquitous Computing and Computational Social Science. I am interested in developing mathematical and computational models that leverage the proliferation of sensors and breakthroughs in machine learning to (1) understand societies and social phenomenas at different spatial scales (2) model social dynamics of human behavior. More specifically my research focus is on sensing, modeling, understanding and predicting human behavior using the 'digital traces' that are generated daily in our online and offline lives. Results of my research have been published in top-tier conferences (WSDM, CHI, CSCW, Ubicomp, ICWSM) and journals, and trialled as part of multiple deployments in European projects and private entities such as WebSummit 2015. My most recent professional activities include acting as Technical Program Co-chair for SocInfo2017, and serving as AC committee member of CHI 2019, WWW2018, and ICWSM 2019.

RESEARCH AREAS

Ubiquitous Computing, Social Computing, AI/ML Biases, Ethics.

EDUCATION

PhD in Computer Science   University College London (UCL)
Awarded March 2011   *Sep. 2007 - Mar. 2011*
- **Thesis Title**: *Content Dissemination for Participatory Delay Tolerant Networks*
- **Advisors**: Prof. Licia Capra and Prof. Stephen Hailes
  The thesis presents content dissemination algorithm that leverages information about user mobility, as well as interest and social network, in order to deliver content without the need for internet infrastructure, while avoiding overwhelming non-interested users.

M.Eng Computer Science   University College London (UCL)
First Class Honors   *Sep. 2003 - May 2007*

WORK EXPERIENCE

- **Assistant Professor of Computer Science**   Sept 2019-Present
  STEM Division   *University of Washington Bothell*

- **Senior Research Scientist [Consultant]**   Oct 2018 - March 2019
  United Nations Global Pulse Labs

- **Affiliate Assistant Professor**   Sep 2017 -Dec 2018
  Department of Sociology   *University of Washington*

- **Senior Research Scientist** April 2012- June 2016
  IoT Group (Bell Laboratories) *Nokia*
- **Research Fellow (Post-Doc)** UCL
  Computer Science *March 2011- Feb 2012*

- **Visiting Researcher** Berlin
  Deutsche Telekom Labs *April 2010 - July 2010*

- **Asset Servicing Technology Developer** London
  Goldman Sachs *May 2006 - Sep. 2006*

- **Research and Development Intern** London
  Computer Science Department (UCL) *May 2005 - Sep. 2005*

Funded Projects

- **Co-PI** September 2018-March 2019
  Improving recreational opportunities with crowd-sourced data *Funded by Bullitt Foundation*
  This project explores innovates the use of social media postings and crowd-sourced information as instant and real-time data on recreation facilities such as urban parks etc. More specifically I aim to detect the demographics of the visitors through the use of images and text analysis that is shared on social media enabling policy makers to map and measure use of such facilities more efficiently and at finer spatial and temporal scales.

- **Project Lead** June-September 2016
  Crowd-Sensing Census: A Tool for Estimating and Visualizing Poverty Maps *e-Science Institute*
  This project was part of Data Science for Social Good funded by University of Washington. In this project we proposed a new methodology for estimating poverty and visualizing it in the form of poverty maps. This methodology combined the data streams from two different data sources of Call Data Records and OpenStreetMap from which we derive up-to-date poverty indicators, at a very fine level of spatial granularity. Based on our methodology and design requirements gathered from stakeholders we designed and implemented a poverty mapping tool for policy makers.

- **Principle Investigator** 2013-2014
  EIT ICT TravelDashboard Project

  TravelDashboard a *Framework for the Delivery of Personalized Mobility Services to Urban Travelers* was a multi-million Euro project funded by the European Union consisting of UCL, INRIA, THALES, Transport for London, Systematic and Bell Labs. This project aimed at developing a self-adaptive data collection middleware, that gathers both passive sensory information and active user-generated content in order to disseminate transport network status updates to travelers. The final result of this project was a personalized mobility service that included: user preferences about various aspects of mobility (e.g., punctuality, crowdedness, and sociability of transport systems) that was launched in Milano Expo 2015.

TEACHING EXPERIENCES

- **Data and Society (SOC225)** — Spring 2018, Autumn 2018
  Sociology — *University of Washington*

- **Data Science and Society (SOC201B)** — 2017
  e-Science and Sociology — *University of Washington*

- **Publishing Scientific Papers with LaTeX/BibTeX** — 2011
  Graduate School — *University College London*

- **Software Engineering (GS22)** — 2010
  MSc Computer Science — *University College London*

- **Requirement Analysis (GS01)** — 2009
  MSc Computer Science — *University College London*

- **Principles of Programming (COMP1007)** — 2008
  BSc Computer Science — *University College London*

PROFESSIONAL ACTIVITIES

- Organising Committee
  - **Program Chair:**
    * Making Sense of Online Data for Population Research colocated with ICWSM2018
    * The Ninth International Conference in Social Informatics 2017
    * The First International Conference on Urban-IoT in 2014.
    * The First GeoHCI Workshop in conjunction with CHI2013
    * The First Quantified Workplace Workshop in conjunction with CSCW2016
  - **Broadening Participation Chair**: Ubicomp 2017.
  - **Panel Chair**: Urban-IoT 2016.
  - **AC Program Committee:**
    * CHI 2019
    * WWW 2018
    * ICWSM 2015-2019
    * SocInfo 2016-2018
    * CSCW 2016
    * UIC 2015-2016
    * MobiQuitous 2014-2018
    * Wikisym 2013-2015
    * PURBA 2015-2017
    * UrbanIoT 2015-2018
    * UbiCrowd 2012
  - **External Reviewer:**
    * IMWUT 2016-2019

* CHI 2013-2017
* MobiCase 2015
* Ubicomp 2013-2016
* IEEE Pervasive Computing
* IEEE Transactions in Computing

- **Editorial Advisory Board of:** "Enriching Urban Spaces with Ambient Computing, the Internet of Things and Smart City Design"

- **Guest Editor :** "MDPI Open Access Journal Special Issue on Quantified Workplace"

AWARDS and GRANTS

Improving Recreational Opportunities with Crowd-sourced Data (Co-PI)	2018-2019
EIT-ICT Labs : Travel Dashboard: Personalised Mobility to Urban Travellers (PI)	2013
Women in Networking (N2Women) Fellowship Award	2010
EPSRC (DTA) PhD full funding for 4 years	2007-2010
Nuffield Undergraduate Award	2005

PROFESSIONAL ROLES

- **N2Women Fellowship Chair**   2015-2017
  http://committees.comsoc.org/n2women/
  I am immensely proud to serve as as the N2WOMEN fellowship co-chair 2015-2017. Networking Networking Women (N2 Women) is a discipline-specific community for researchers in the communications and networking research fields. The main goal of N2 Women is to foster connections among the under-represented women in computer networking and related research fields. This initiative is very close to my heart and I am heavily involved in ways of bringing more women to computer science.

- **Honorary Research Staff at UCL**   2012-Present

  I hold an honorary research position at UCL and actively collaborate with my previous research team and Intel Collaborative Research Institute located at UCL

- **Seattle Pedestrian Advisory Board Member**   2016-2021

  I hold a voluntary position in Seattle City Council where I serve as a board member of the Seattle Pedestrian Advisory Board (SPAB), responsible for providing feedback and advice to the mayor regarding the pedestrians concerns. As part of this role I am able to bring my urban crowdsourcing research insight into practice.

Student Advising and Mentorship

Research Interns at Sociology, University of Washington

- [2018] Kyndal Arkley - Geographic Biases in Sharing Economy Platform

Research Interns at e-Science Institute University of Washington

- [2016] - Rachael Dottle- Data Science for Social Good

- [2016] - Myeong Lee - Data Science for Social Good

- [2016] - Carlos Espino Garcia- Data Science for Social Good

- [2016] - Imam Subkhan- Data Science for Social Good

Research Interns at Bell Labs

- [2015] - Otto Waltari- WiFi sensing

- [2014] - Alessandro Montanari - Privacy of IoT objects

- [2013] - Moustafa Alzantot - TravelDashboard

- [2012] - Vaclav Belak - Information Diffusion

Research Interns at UCL

- [2011] - Desi Hristova - Social Aspect of Crowdsourcing

- [2010] - G. Lo Giusto - Folksonomy-based Content Dissemination

- [2009] - Jonathan Elis - Friend Sensing

External PhD Advisor

- [2012-2014] - Chris Smith

External PhD Examiner

- [2015] - Catia Prandi

SELECTED PUBLICATIONS

2019

- *A Framework for Evaluating Biases in Socio-Technical Platforms.* Under Submission.

2018

- *Towards Understanding Communication Behavior Changes during Floods using Cell Phone Data.* Vanessa Frias-Martinz, Lingzi Hong, Myeong Lee, Afra Mashhadi. In the proceedings of the seventh International conference on social informatics. **(SocInfo2018)**

- *Who Gets the Lion's Share in the Sharing Economy: A case study of social inequality in AirBnB.* Afra Mashhadi, Clovis Chapman. In the proceedings of the seventh International conference on social informatics. **(SocInfo2018)**

2017

- Book: *Social Informatics*. Giovanni Ciampaglia, Afra Mashhadi, Taha Yasseri. In the **Lecture Notes in Computer Science** Vol 10539 and LNCS 10540.

- *A Tool for Estimating and Visualizing Poverty Maps*. Myeong Lee, Rachael Dottle, Carlos Espino, Imam Subkhan, Ariel Rokem, Afra Mashhadi. In the proceedings of the international conference on (**NetMob2017**)

2016

- Afra Mashhadi, Utku Gunay Acer, Claudio Forlivesi, Aidan Boarn, Phil Scholl, Fahim Kawsar. *Exploring Space Syntax on Entrepreneurial Opportunities with Wi-Fi Analytics*. In the proceedings of the ACM international joint conference on Pervasive and Ubiquitous Computing (**Ubicomp 2016**).

- Afra Mashhadi, Akhil Mathur, Marc Van den Broeck, Geert Vanderhulst, Fahim Kawsar. *Understanding the Impact of Personal Feedback on Face-to-Face Interactions in the Workplace*. In the proceedings of the 18th ACM International Conference on Multimodal Interaction.(**ICMI 2016**). *Nominated for Best Paper Award*.

- Afra Mashhadi, Akhil Mathur, Marc Van den Broeck, Geert Vanderhulst, Fahim Kawsar. *A Case Study on Capturing and Visualising Face-to-Face Interactions at Workplace*. In the Industrial Track of the ACM International Conference on Human-Computer Interaction with Mobile Devices and Services.(**MobileHCI 2016**).

- Alessandro Montanari, Afra Mashhadi, Akhil Mathur, Fahim Kawsar. *Understanding the Privacy Design Space for Personal Connected Objects*. In proceedings of the 30th International Conference on (**BritishHCI 2016**).

- Afra Mashhadi, Sourav Battacharya, Fahim Kawsar. *Understanding the Impact of Geographical Context on Subjective Well-Being of Urban Citizens*. In the proceedings of the ACM international conference on **UrbanIoT 2016** .

- Afra Mashhadi, Fahim Kawsar, Akhil Mathur, Casey Dugan, N.Sadat Shami. *Let's Talk About the Quantified Workplace*. In the proceedings of the **CSCW 2016** Companion, San Francisco, CA, USA.

2015

- Geert Vanderhulst, Afra Mashhadi, Mina Dashti, Fahim Kawsar. *Detecting Human Encounters from WiFi Radio Signals*. In the proceedings of the 14th ACM international conference on Mobile and Ubiquitous Multimedia (**MUM 2015**).

- Akhil Mathur, Marc Van den Broeck, Geert Vanderhulst, Afra Mashhadi, Fahim Kawsar. *Tiny Habits in the Giant Enterprise: Understanding the Dynamics of a Quantified Workplace*. In the proceedings of the ACM international joint conference on Pervasive and Ubiquitous Computing (**Ubicomp 2015**).

- U. Gunay Acer, A. Mashhadi, C. Forlivesi, F. Kawsar. *Energy Efficient Scheduling for Mobile Push Notifications.* In proceedings of the 12th International Conference on Mobile and Ubiquitous Systems: Computing, Networking and Services (**Mobiquitous 2015)**.

- V. Belak, A. Mashhadi, A. Sala, D. Morisson. *Phantom Cascades: The effect of hidden nodes on information diffusion.* In Elsevier Journal of Computer Communication.

- G. Vanderhulst, M. Dashti, A. Mashhadi and F. Kawsar. *CrumblR: Enabling Proxemic Services through Opportunistic Location Sharing.* In Proceedings of the International Conference on Pervasive Computing and Communication (**Percom 2015**), March 2015

- A. Mashhadi, G. Quattrone, and L.Capra. *The Impact of society on Volunteered Geographic Information: the case of OpenStreetMap.* As a book chapter in Springer Edition of OpenStreetMap in GISceince: experiences, research and applications.

2014

- A. Mashhadi, Akhil Mathur and Fahim Kawsar. *The Myth of Subtle Notification.* In Adjunct Proceedings of the International Joint Conference on Pervasive and Ubiquitous Computing (**UbiComp 2014**), September 2014

- A. Mashhadi and Fahim Kawsar. *Human Data Interaction in IoT: The Ownership Aspect.* In Proceedings of The IEEE World Forum on Internet of Things 2014 (WF-IoT 2014), Seoul, Korea, 6-8 March 2014

- C. Smith, A. Mashhadi and L.Capra. *Poverty on the Cheap: Estimating Poverty Maps Using Aggregated Mobile Communication Networks.* In Proceedings of the of the ACM conference on Human Factors in Computing Systems (**CHI2014**)

- G. Quattrone, A. Mashhadi , L. Capra. *Modeling Growth of Urban Crowd-Sourced Information.* In Proceedings of the 7th ACM International Conference on the Web Search and Data Mining.(**WSDM2014**)

- G. Quattrone, A. Mashhadi , L. Capra. *Mind the Map: The Impact of Culture and Economic Affluence on Crowd-Mapping Behaviours.* In Proceedings of the 17th ACM International Conference on the Computer Supported Work and Social Computing. (**CSCW2014**)

2013

- T. Yasseri, G. Quattrone, A. Mashhadi. *Temporal Analysis of Activity Patterns of Editors in Collaborative Mapping Project of OpenStreetMap.* In Proceedings of the 8th International Conference on Wikis and Open Collaboration (**Wikisym2013**).

- B. Hecht, J.Shoning, M.Haklay, L.Capra, A. Mashhadi, L. Terveen and M. Kawn. *Geographic Human Computer Interaction.* In Proceedings of the ACM conference on Human Factors in Computing Systems. **CHI2013**.(Extended Abstract).

- C. Smith, A. Mashhadi and L.Capra. *Ubiquitous Sensing for Mapping Poverty in Developing Countries.* In Proceedings of in 3rd International Conference on the Analysis of Mobile Phone Datasets (**NetMob2013**). May 2013.

- D. Hristova and G. Quattrone and A. Mashhadi and L. Capra. *The Life of the Party: Impact of Social Mapping on OpenStreetMap.* In Proceedings of the 8th AAAI International Conference on Weblogs and Social Media (**ICWSM2013**). June 2013.

- A. Mashhadi and Giovanni Quattrone and L. Capra. *Putting Ubiquitous Crowd-sourcing into Context.* In Proceedings of the 16th ACM International Conference on the Computer Supported Work and Social Computing (**CSCW2013**). February 2013.

2012

- A. Mashhadi and Giovanni Quattrone and L. Capra and Peter Mooney. *On the Accuracy of Urban Crowd-Sourcing for Maintaining Large-Scale Geospatial Databases.* In Proceedings of the 8th International Conference on Wikis and Open Collaboration (**Wikisym2012**). Linz, Austria. August 2012.

- D. Hristova and A. Mashhadi and L. Capra *Mapping Community Engagement with Urban Crowd-Sourcing.* In Proceedings of When the City Meets the Citizen (WCMCW), in conjunction with ICWSM. Dublin, Ireland. June 2012.

2011

- A. J. Mashhadi and L. Capra. *Quality Control for Real-Time Crowdsourcing.* In Proceedings of the 2nd ACM International Workshop on Ubiquitous Crowdsourcing (UBICROWD'11). Beijing, China. September 2011.

- A. J. Mashhadi and L. Capra. *Priority Scheduling for Participatory Delay Tolerant Networks.* In Proceedings of the 12th IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (**WoWMoM'11**). Lucca, Italy. June 2011.

- A. J. Mashhadi, S.Ben Mokhtar and L. Capra. *Fair Content Dissemination in Participatory DTNs.* Elsevier Journal Special Issue on Ad Hoc Networks. June 2011.

2010

- G. Lo Giusto, A. J. Mashhadi, and L. Capra. *Folksonomy-based Reasoning for Content Dissemination in Mobile Settings.* In Proceedings of the 6th ACM Workshop on Challenged Networks (CHANTS10 in conjunction with MobiCom). Chicago. USA. September 2010.

- S.Ben Mokhtar, A. J. Mashhadi, L. McNamara and L. Capra. *A Self-Organising Directory and Matching Service for Opportunistic Social Networking.* In Proceedings of the 3rd Workshop on Social Network Systems (SNS'10). Paris. France. April 2010.

2009

- A.J. Mashhadi, S. Ben Mokhtar and L. Capra. *Habit: Leveraging Human Mobility and Social Network for Efficient Content Dissemination in DTN*. In Proceedings of the 10th IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (**WoWMoM09**). Kos. Greece. June 2009.

PATENTS

2015

- Geert Vanderhulst, A. Mashhadi, and Fahim Kawsar. *Method For Generating A Reputation Measure, An Access Point, User Equipment And A Computer Program Product* . EU Patent Pending
- Geert Vanderhulst, A. Mashhadi, and Fahim Kawsar. *User Tracking*. EU Patent Pending

2014

- Geert Vanderhulst and A. Mashhadi. *A Platform For Privacy-Preserved User Location Sharing Based On Wireless Signal Fingerprinting*. EU Patent Pending

- Alessandro Montanari, A. Mashhadi, Aidan Boran and Fahim Kawsar. *Privacy Meter for Connected Devices*. U.S Patent Pending

- A. Mashhadi, Utku Acer Gunay, Fahim Kawsar and Marc Van den Broeck. *Wearable Display For Personal Computing*. EU Patent Pending

2013

- A. Mashhadi, Fahim Kawsar, Utku Acer and Claudio Forlivesi. *Method For Priority Scheduling Of Notification And Ad Messages For Efficient Network Communication*. EU Patent Pending

- A. Mashhadi, Aidan Boran and Vijay Venkateswaran. *Security Mechanism for Short Range Radio Frequency Communication Method*. US Patent Pending

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REFERENCES

Professor Licia Capra, University College London, Computer Science Department, l.capra@ucl.ac.uk
Professor Vanessa Frias Martinez, University of Maryland, i-School, vfrias@umd.edu
Professor Kathrine Stovel, University of Washington, Sociology, stovel@u.washington.edu
Professor Eric Jul, University of Oslo, Department of Computer Science, ericjul@ericjul.dk