

Vanessa Frias-Martinez

CONTACT INFORMATION	College of Information Studies, University of Maryland 2123B Hornbake Bldg. South Wing, College Park, Maryland MD 20742	<i>email:</i> vfrias@umd.edu <i>web:</i> www.vanessafriasmartinez.org
RESEARCH INTERESTS	Urban Computing, Social Computing, Big Data Analytics, Behavioral Modeling, Artificial Intelligence, Data for Social Good.	
CURRENT POSITION	University of Maryland , College Park, USA Assistant Professor in the College of Information Studies Affiliate Assistant Professor in the Computer Science Department Faculty Associate in the Maryland Population Research Center Faculty Member in the Center for Geospatial Information Science	2014 - present
EDUCATION	Columbia University , New York, NY USA Ph.D. in Computer Science	October 2008
	Columbia University , New York, NY USA M.Sc. in Computer Science	May 2003
	Universidad de Valladolid , Valladolid, Spain B.Sc. in Computer Engineering	May 1999
PROFESSIONAL EXPERIENCE	Telefonica Research , Madrid, Spain <i>Researcher in the Data Mining and User Modelling Team</i>	2009 - 2014
	Columbia University , New York, NY USA <i>Graduate Research Assistant</i>	2001 - 2008
	Google Inc. Zurich, Switzerland <i>Software Engineer Intern at the AdSpam Team</i>	Summer 2007
	One Laptop Per Child, OLPC, MIT , Boston, USA <i>Consultant</i>	Summer 2006
	United Nations Development Program, UNDP , New York, USA <i>Intern at the E-learning Group</i>	Summer 2005
PUBLICATIONS	Book Chapters Vanessa Frias-Martinez, "ICT, development and small businesses", Chapter 14, Mobile Phones and Emerging Markets in Latin America (Telefonia Movil y Mercados Emergentes latinoamericanos). Ariel Eds., 2013.	

Journal Publications

Andreea Molnar, Jesus Virseda and Vanessa Frias-Martinez, “Insights from EducaMovil: Involving Teachers in Creating Educational Content for Mobile Learning Games”, **Journal of Interactive Learning Research**, volume 26(2), 2015.

Vanessa Frias-Martinez and Enrique Frias-Martinez, “Spectral Clustering for Sensing Urban Land Use using Twitter Activity”, International Scientific Journal **Engineering Applications of Artificial Intelligence**, volume 35, October 2014.

John Quinn, Vanessa Frias-Martinez and Lakshminarayan Subramanian, “Computational Sustainability and Artificial Intelligence in the Developing World”, **AI Magazine**, Fall 2014.

Vanessa Frias-Martinez, Victor Soto, Angel Sanchez and Enrique Frias-Martinez, “Consensus Clustering for Urban Land Use Analysis using Cell Phone Network Data”, International Journal of **Ad Hoc and Ubiquitous Computing**, volume 17, issue 1, October 2014.

Vanessa Frias-Martinez and Jesus Virseda, “Cell Phone Analytics: Scaling Human Behavior Studies into the Millions”, Journal of Information Technologies and International Development, **ITID**, Special ICTD2012 Issue 2, Volume 9, 2013.

Vanessa Frias-Martinez, Jesus Virseda and Enrique Frias-Martinez, “SocioEconomic Status and Physical Mobility”, Journal of Information Technology for Development, **ITD**, February Issue, pages 1-16, 2012.

Nestor Mirabal, Vanessa Frias-Martinez, Tarek Hassan and Enrique Frias-Martinez, “Fermi’s Sibyl: Mining the Gamma-ray Sky For Dark Matter Subhaloes”, Monthly Notices of the **Royal Astronomical Society: Letters**, Volume 424, pages L64-L68, 2012.

Peer-Reviewed Conference Proceedings

Jay Ghurye, Gautier Krings and Vanessa Frias-Martinez, “A Framework to Model Human Behavior at Large Scale during Natural Disasters”, IEEE International Conference on Mobile Data Management, **MDM 2016** (acceptance rate 25 %).

Lingzi Hong, Enrique Frias-Martinez and Vanessa Frias-Martinez, “Topic Models to Infer Socioeconomic Maps”, AAAI Conference on Artificial Intelligence, **AAAI 2016** (acceptance rate 26 %).

Jiaying He, Lingzi Hong, Vanessa Frias-Martinez and Paul Torrens, “Uncovering Social Media Reaction Patterns to Protest Events: A Spatiotemporal Dynamics Perspective of Ferguson Unrest”, International Conference on Social Informatics, **SocInfo**, 2015.

Gaurav Paruthi, Enrique Frias-Martinez and Vanessa Frias-Martinez, “Understanding Lending Behaviors on Online Microlending Platforms: The Case for Kiva”, International AAAI Conference on Web and Social Media **ICWSM**, 2015 (acceptance rate 20 %).

A. Morales, D. Pastor, Y. Torres, V. Frias-Martinez, E. Frias-Martinez, N. Oliver, A. Rutherford, T. Logar, R. Clausen, O. De Backer, M. Luego-Oroz, “Studying Human Behavior through the Lens of Mobile Phones during Floods”, **Netmob**, 2015.

Tony Liang and Vanessa Frias-Martinez, “Cars and Calls: Using CDR Data to Approximate Official Traffic Counts”, D4D Challenge, **Netmob**, 2015

David Pastor-Escuredo, Alfredo Morales-Guzman, Yolanda Torres-Fernandez, Jean-Martin Bauer,

Amit Wadhwa, Carlos Castro-Correa, Liudmyla Romanoff, Jong Gun Lee, Alex Rutherford, Vanessa Frias-Martinez, Nuria Oliver, Enrique Frias-Martinez, Miguel Luengo-Oroz, “Flooding through the lens of mobile phone activity”, IEEE Global Humanitarian Technologies Conference, **GHTC**, 2014.

Vanessa Frias-Martinez, Abson Sae-tang and Enrique Frias-Martinez, “To Call, or To Tweet? Understanding 311 Citizen Complaint Behaviors”, International Conference on Social Computing, **Socialcom**, Palo Alto, 2014.

Vanessa Frias-Martinez, Victor Soto, Jesus Virseda and Enrique Frias-Martinez, “Can Cell Phone Traces Measure Social Development?”, **NetMob**, Boston, USA, 2013 (Oral Presentation).

Enrique Frias-Martinez, Graham Williamson and Vanessa Frias-Martinez, “Simulation of Epidemic Spread Using Cell Phone Call Data: H1N1 Case Study”, **NetMob**, Boston, USA, 2013.

Vanessa Frias-Martinez, Cristina Soguero, Malvina Josephidou and Enrique Frias-Martinez, “Forecasting Socioeconomic Trends With Cell Phone Records”, 3rd Symposium on Computing for Development, **DEV**, Bangalore, India, 2013.

Vanessa Frias-Martinez, Victor Soto, Heath Hohwald and Enrique Frias-Martinez, “Characterizing Urban Landscapes Using Geolocated Tweets”, 4th International Conference on Social Computing, **SocialCom**, Amsterdam, The Netherlands, 2012.

Vanessa Frias-Martinez, Jesus Virseda and Aldo Gomero, “Mobilizing Education: Evaluation of a Mobile Learning Tool in a Low-Income School”, **MobileHCI**, San Francisco, USA, 2012.

Vanessa Frias-Martinez and Jesus Virseda, “On The Relationship Between Socio-Economic Factors and Cell Phone Usage”, Third International Conference on Information & Communication Technologies and Development, **ICTD**, Atlanta, USA, 2012. **Selected among Top 10 Best Papers.**

Enrique Frias-Martinez, Graham Williamson and Vanessa Frias-Martinez, “An Agent-Based Model Of Epidemic Spread Using Human Mobility and Social Network Information”, Third International Conference on Social Computing, **SocialCom**, Boston, USA, 2011.

Victor Soto, Vanessa Frias-Martinez, Jesus Virseda and Enrique Frias-Martinez, “Prediction of Socioeconomic Levels using Cell Phone Records”, International Conference on User Modeling, Adaptation and Personalization, **UMAP**, Girona, Spain, 2011.

Andreea Molnar and Vanessa Frias-Martinez, “EducaMovil: Mobile Educational Games Made Easy”, World Conference on Educational Multimedia, Hypermedia and Telecommunications, **Ed-Media**, Lisbon, Portugal, 2011.

Vanessa Frias-Martinez, Jesus Virseda and Enrique Frias-Martinez, “The Anatomy of Mobile Handsets: On the development of effective cell phone services”, 2nd International Conference on Mobile Communication Technology for Development, **M4D**, Kampala, Uganda, 2010.

Marco Vieira, Vanessa Frias-Martinez, Nuria Oliver and Enrique Frias-Martinez, “Characterizing Dense Urban Areas from Mobile Phone-Call Data: Discovery and Social Dynamics”, 2nd International Conference on Social Computing, **SocialCom**, Minneapolis, Minnesota, USA, 2010.

Marco Vieira, Enrique Frias-Martinez, Petko Bakalov, Vanessa Frias-Martinez and Vassilis Tsotras, “Querying Spatio-Temporal Patterns in Mobile Phone-Call Datasets”, 11th International Conference On Mobile Data Management, **MDM**, Kansas City, Missouri, 2010.

Luigi di Caro, Vanessa Frias-Martinez and Enrique Frias-Martinez, “Analyzing The Role Of Di-

mension Arrangement For Data Visualization in Radviz”, The 14th Pacific-Asia Conference on Knowledge Discovery and Data Mining, **PAKDD**, India, 2010.

Vanessa Frias-Martinez, Enrique Frias-Martinez and Nuria Oliver, “A Gender-centric Analysis of Calling Behavior in a Developing Economy Using Call Detail Records”, **AAAI** 2010 Spring Symposia Artificial Intelligence for Development, **AI-D**, Stanford, USA, 2010.

Alberto Rubio, Vanessa Frias-Martinez, Enrique Frias-Martinez and Nuria Oliver, “Human Mobility in Advanced and Developing Economies: A Comparative Analysis”, **AAAI** 2010 Spring Symposia Artificial Intelligence for Development, **AI-D**, Stanford, USA, 2010.

Vanessa Frias-Martinez, Joseph Sherrick, Salvatore Stolfo and Angelos Keromytis, “A Network Access Control Mechanism Based on Behavior Profiles”, In Proceedings of the Annual Computer Security Applications Conference, **ACSAC**, Hawaii, USA, 2009.

Vanessa Frias-Martinez, Salvatore Stolfo and Angelos Keromytis, “BARTER: Behavior Profile Exchange for Behavior-based Admission and Access Control in MANETs”, In Proceedings of the International Conference on Information Systems Security, **ICISS**, Kolkata, India, 2009.

Vanessa Frias-Martinez, Salvatore Stolfo and Angelos Keromytis, “Behavior-Based Network Access Control: A Proof-of-Concept”, Information Security Conference , **ISC**, Taipei, Taiwan, 2008.

Vanessa Frias-Martinez, Salvatore Stolfo and Angelos Keromytis, “Behavior-Profile Clustering for False Alert Reduction in Anomaly Detection Sensors”, In Proceedings of the Annual Computer Security Applications Conference, **ACSAC**, Anaheim, USA, 2008.

Vanessa Frias-Martinez, Elizabeth Sklar and Simon Parsons, “Exploring Auction Mechanisms for Role Assignment in Teams of Autonomous Robots”, In Proceedings of the **Robocup** International Symposium, Lisbon, Portugal, 2004.

Vanessa Frias-Martinez, Marek Marcinkiewicz, Simon Parsons and Elizabeth Sklar, “Using Multiagent Coordination Techniques in the Robocup Four-legged League”, **AAAI** Spring Symposium on Bridging the Multiagent and Multirobotic Research Gap, Palo Alto, USA, 2004.

Vanessa Frias-Martinez and Enrique Frias-Martinez, “Design of a fuzzy positioning controller for a robot”, In Proceedings of the 9th Conference of the Spanish Association of Artificial Intelligence, **CAEPIA**, Gijon, Spain, 2001.

Enrique Frias-Martinez and Vanessa Frias-Martinez, “Real-Time Fuzzy Controller on a HC12 Microcontroller”, In Proceedings of the 9th Conference of the Spanish Association of Artificial Intelligence, **CAEPIA**, Gijon, Spain, 2001.

Workshops, Posters and Demos

Bill Wu, Lingzi Hong and Vanessa Frias-Martinez, “Crowdsourcing Biking Times”, Workshop on Pervasive Urban Applications, PURBA, International Joint Conference on Pervasive and Ubiquitous Computing, **UbiComp**, 2015.

Vanessa Frias-Martinez and Enrique Frias-Martinez, “Crowdsourcing Land Use Maps via Twitter”, Data Science for Social Good Workshop at **KDD**, NYC, USA, 2014.

Vanessa Frias-Martinez, Younnes Mounni and Enrique Frias-Martinez, “Estimation of traffic flow using passive cell-phone data”, First Workshop on Data Science and Macro-Modeling at **SIGMOD**, Utah, USA, 2014.

Younes Mounmy, Vanessa Frias-Martinez and Enrique Frias-Martinez, “Characterizing Social Response to Urban Earthquakes using Cell-Phone Network Data: The 2012 Oaxaca Earthquake”, Third Workshop on Pervasive Urban Applications at **Pervasive**, Zurich, Switzerland, 2013.

Vanessa Frias-Martinez, Cristina Soguero and Enrique Frias-Martinez, “Estimation of Urban Commuting Patterns Using Cellphone Network Data”, ACM Workshop on Urban Computing at **KDD**, Beijing, China, 2012.

Vanessa Frias-Martinez, Alberto Rubio and Enrique Frias-Martinez, “Measuring the Impact of Epidemic Alerts on Human Mobility using Cell-Phone Network Data”, Second Workshop on Pervasive Urban Applications at **Pervasive**, Newcastle, UK, 2012.

Vanessa Frias-Martinez, Victor Soto, Jesus Virseda and Enrique Frias-Martinez, “Computing Cost-Effective Census Maps From Cell Phone Traces”, Second Workshop on Pervasive Urban Applications at **Pervasive**, Newcastle, UK, 2012.

Vanessa Frias-Martinez, Jesus Virseda and Aldo Gomero, “EducaMovil: A Mobile Learning Tool For Low-Income Schools”, Demo at **MobileHCI**, San Francisco, USA, 2012.

Vanessa Frias-Martinez and Jesus Virseda, “Personalization Of Mobile Learning Tools For Low-Income Populations”, Workshop on Personalization Approaches in Learning Environments at **UMAP**, Girona, Spain, 2011.

Vanessa Frias-Martinez, “Technologies for Emerging Economies in Latin America”, in Proceedings of the First International Workshop on Research on **ICT For Human Development**, Madrid, Spain, 2010.

Vanessa Frias-Martinez, Jesus Virseda and Enrique Frias-Martinez, “Socio-Economic Levels and Human Mobility”, Qual Meets Quant Workshop at the International Conference on Information & Communication Technologies and Development, **ICTD**, London, UK, 2010.

Vanessa Frias-Martinez, Jesus Virseda, Alberto Rubio and Enrique Frias-Martinez, “Towards Large Scale Technology Impact Analyses: Automatic Residential Localization from Mobile Phone-Call Data”, Poster at the International Conference on Information & Communication Technologies and Development, **ICTD**, London, UK, 2010.

Vanessa Frias-Martinez and Salvatore Stolfo, “BARTER: Profile Model Exchange for Behavior-Based Access Control and Communication Security in MANETs”, Poster at **IBM Security and Privacy Day**, New York, USA, 2006.

Vanessa Frias-Martinez and Elizabeth Sklar, “A Framework for Exploring Role Assignment in Real-time, multiagent Teams”, In Proceedings of the European Workshop on Multiagent Systems, **EU-MAS**, Barcelona, Spain, 2005.

Vanessa Frias-Martinez and Elizabeth Sklar, “A Team-based Co-evolutionary Approach to Multi-agent Learning”, In Proceedings of the Workshop on Learning and Evolution in Agent Based Systems at the Autonomous Agents and Multiagent Systems, **AAMAS**, New York, USA, 2004.

FUNDING

PI on NSF CNS-1336915, Crowdsourcing Urban Bicycle Level of Service Measures, \$200,000, September 2016-September 2018.

co-PI on NSF Collaborative Research RIPS Type 1: Human geography motifs to evaluate infrastructure resilience, \$299,993, September 2014-September 2016. Collaboration between University of Maryland and University of Southern California.

PI on World Bank Big Data Innovation Challenges: Forecasting Poverty and Shared Prosperity Using Cell Phone Data, \$140,000 (split with WB, UMD \$86,625), September 2015-September 2016.

ADVISING

Supervision of PhD students

Lingzi Hong, PhD student at **University of Maryland**, USA, *Fall 2014-*

Jiahui Wu, PhD student at **University of Maryland**, USA, *Fall 2016-*

Kiran Javkar, PhD student at **University of Maryland**, USA, *Fall 2016-*

Suraj Nair, PhD student at **University of Maryland**, USA, *Fall 2016-*

Jay Ghurye, PhD student at **University of Maryland**, USA, *Fall 2014-Fall 2016*

Malvina Josephidou, PhD student at **Cambridge University**, UK, *Summer 2012*

Andreea Molnar, PhD student at **National College of Ireland**, Ireland, *Summer 2010*

Michael Paik, PhD student at **New York University**, USA, *Summer 2010*

Marco Vieira, PhD student at **University of California at Irvine**, USA, *Summer 2009*

Mayank Lahiri, PhD student at **University of Chicago**, USA, *Summer 2009*

PhD Committees

Cheng Fu, PhD student at the Department of Geography, University of Maryland

Tan Xu, PhD student at the iSchool, University of Maryland

Jyothi Vinjumur, PhD student at the iSchool, University of Maryland

Ning Gao, PhD student at the iSchool, University of Maryland

First year Review Committee

Myeong Lee, PhD student at the iSchool

Master Theses (directed)

Beatriz Hernandez, Master Thesis on **Disentangling Social Issues from Twitter Activity** at Rey Juan Carlos University, Spain (co-advised with Prof. Diana Marin), *December 2013*

Abson Sae-Tang, Master Thesis on **Understanding Complaint Behaviors in Social Media** at EPFL, Switzerland, *Summer 2013*

Marc Zimmerman, Master Thesis on **Modeling Traffic Patterns from Cellular Data** at EPFL, Switzerland, *Summer 2013*

Leonardo Vargas, Master Thesis on **Adaptation Models for Mobile Education** at Rey Juan Carlos University, Spain, *Summer 2011*

Joseph Sherrick, Master Thesis on **Behavioral Profiling as a Security Mechanism for MANETs** at Columbia University, USA (co-advised with Prof. Salvatore Stolfo), *Spring 2008*

Supervision of MSc and Undergraduate Students

Bill Wu, Undergraduate student at **University of Maryland**, USA, *Spring 2014-*

Tony Liang, Undergraduate student at **University of Maryland**, USA, *Summer 2014-*

Younes Moumni, Master student at **EPFL**, Switzerland, *Summer 2013,2012*

Virginia Paniagua, Undergraduate student at **Carlos III University**, Spain, *Spring, Summer 2012*

Cristina Soguero, Master student at **Rey Juan Carlos University**, Spain, *Fall 2010 - Fall 2012*

Jesus Virseda, Master student at **Rey Juan Carlos University**, Spain, *Fall 2010 - Fall 2012*

Victor Soto, Master student at **Autonoma University**, Spain, *Fall 2009 - Fall 2011*

Alberto Rubio, Master student at **Rey Juan Carlos University**, Spain, *Fall 2009 - Fall 2011*

Stefano Pacifico, Master student at **Columbia University**, USA, *Fall 2007 - Spring 2008*

Somdutt Panaik, Master student at **Columbia University**, USA, *Fall 2006 - Spring 2007*

TEACHING

College of Information Studies, University of Maryland **Spring 2014-**

Advanced Data Science (INFM 750), Spring 2015-16, Fall 2017

Introduction to Data Science (INST 737), Fall 2014, Spring 2016(online)

Information Technology and the Organizational Context (INFM 603), Spring 2014

Department of Computer Science, Columbia University **2001 - 2006**

Teaching Assistant for Intrusion and Anomaly Detection Systems, Spring 2006

Teaching Assistant for Artificial Intelligence, Spring 2003,2005

Teaching Assistant for Advanced Programming, Spring 2004

Teaching Assistant for Robotics, Fall 2001

PROFESSIONAL SERVICE

Review Editor

Editorial Board of *Frontiers in Public Health* 2015-16

Organizer

Tutorials Chair, International Conference on Web and Social Media **ICWSM** 2017

co-PC Chair, ACM Conference on Computing and Development **DEV** 2014

Data Science and Development: Scaling Human Behavior Studies into the Millions at **ICTD** 2013

Qual Meets Quant Workshop at **ICTD** 2010

Program Committee Member

WWW (Ubiquitous Computing Track and Crowdsourcing Track) 2017

IEEE Big Data 2016

International Conference on Social Informatics, **SocInfo** 2014-2017

NetMob	2015-2016
ACM Symposium on Computing for Development, DEV	2011-2017
ACM International Conference on Information and Communication Technologies and Development, ICTD	2013-2017
ACM Conference on User Modeling, Adaptation and Personalization, UMAP	2012
WWW (Web for Emerging Regions Track)	2011
ACM Conference on Computer and Communications Security, CCS	2010
Conference on Mobile Communication and Development M4D	2010
Mobile Life Conference mLife	2009,2010

Reviewer

Journal of Transactions on Big Data	2016
International Conference on Web and Social Media ICWSM	2016
WWW (Crowdsourcing Systems Track)	2016
Journal of Urban Technology	2015
Information Technology and International Development ITID	2013
IEEE Pervasive Computing Magazine	2012
ACM Transactions on Intelligent Systems and Technology	2012
ASE International Conference on Social Computing, SocialCom	2011,2012
Journal of Information Technology For Development, ITD	2012
International Conference on Pervasive Computing Technologies for Healthcare	2012
ACM Conference on User Modeling, Adaptation and Personalization, UMAP	2011,2012
ACM Symposium on Computing for Development, DEV	2011-2013
ACM Conference on Computer and Communications Security, CCS	2007,2010
International Symposium on Research in Attacks, Intrusions and Defenses, RAID	2006,2007
IEEE Communications Letters	2010,2011
IET Information Security Journal	2010,2011

PROFESSIONAL SERVICE

PhD Committee	Spring 2014
MIM Committee	Spring 2014-

INVITED TALKS

NSF Workshop on Smart and Connected Communities , Seattle, USA	January 2016
Virginia Tech , Falls Church, Virginia, USA	November 2015
Maryland Population Research Center , UMD, USA	February 2015
The World Bank , Washington, DC, USA	June 2014
HCIL Lab , University of Maryland, USA	April 2014
NFAIS , Philadelphia, USA	February 2013
The World Bank , Washington DC, USA	May 2013
SwissRe Zurich, Switzerland	October 2012
University of Berkeley, iSchool Berkeley, California	September 2012
Unicef , NYC, NY	July 2012
United Nations Global Pulse NYC, NY	March 2012
Rockefeller Foundation NYC, NY	March 2012
AT&T Security Research Center NYC, NY	Fall 2011
Microsoft Research India Bangalore, India	June 2011
IPID ICT4D Postgraduate Symposium Barcelona, Spain	September 2010

PATENTS

- “Methods, Media, and Systems for Securing Communications Between a First Node and a Second Node”, WO/2007/053708, US2011/0214161, with Columbia University

- “Method for Gender Identification of a Cell Phone Subscriber”, US2012/0083255, with Telefonica Research
- “A Method for Residential Localization of Mobile Phone Users”, WO/2012/072153A1, US2013/0316741 with Telefonica Research
- “Method for an Automatic Identification of Urban Dense Areas from Cell Phone Records”, US2012/0282888, with Telefonica Research
- “Method, Computer Programs and a Use for the Prediction of the Socioeconomic Level Of a Region”, US2014/0032448 with Telefonica Research
- “Method, Computer Programs and a Use for Automatic Identification and Classification of Land Uses”, US2014/0031004 with Telefonica Research
- “Method and Computer Programs For the Construction of Commuting Matrices using Call Detail Records and a Use for Providing User’s Mobility Information”, WO/2014/012927A1, US2014/0024389 with Telefonica Research
- “Method and Computer System To Forecast Economic Time Series Of a Region and Computer Program Thereof”, US2014/0372172 with Telefonica Research
- “Method and System for Traffic Estimation”, WO/2014/012927 with Telefonica Research

MEDIA

NSF Press	February 2015
ScienceDaily	January 2015
Phys.Org	December 2014
The Economist	October 2014
The Columbia Engineering Magazine	October 2013
The Guardian	September 2013
UN Global Pulse Blog	September 2012
Forbes	October 2011