

Luca Maria Aiello, PhD

DATE OF BIRTH June 20, 1985

CONTACT INFORMATION
Affiliation: Bell Labs
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CITIZENSHIP Italian

CURRENT POSITION Senior Research Scientist at Bell Labs Cambridge, UK.

RESEARCH INTERESTS Computational social science, data science, social media, urban informatics, complex networks, recommender systems, user behaviour analysis, peer-to-peer systems.

EDUCATION **University of Turin, Italy**

Feb 2012: PhD, Computer Science. “*Analysis, prediction and privacy-aware design of social media and online search*”.

Oct 2008: MSc, Computer Science. “*Analysis of attacks against structured p2p networks and design of a secure, identity-based Kademlia-like infrastructure*”. 110/110 summa cum Laude, Official Mention and Dissertation Recommended for Publication.

Sep 2006: BSc, Computer Science. “*FairPeers: design and implementation of a file management service with Pastry*”. 110/110 summa cum Laude.

PROFESSIONAL AND ACADEMIC ACTIVITY

- Jun 2016 – now : Bell Labs, Cambridge UK. Senior Research Scientist.
- Apr 2015 – Jun 2016 : Yahoo Labs London, UK. Research Scientist.
- Sep 2013 – Apr 2015 : Yahoo Labs Barcelona, Spain. Research Scientist.
- Jan 2012 – Aug 2013 : Yahoo Labs Barcelona, Spain. Postdoctoral Researcher.
- Jan 2011 – Jun 2011 : Yahoo Labs, Sunnyvale, CA. Intern and collaborator.
- Nov 2010 – Jun 2011 : Center of complex networks and systems, Indiana University. Visiting scholar.

RESEARCH ACTIVITY

My research is focused on the analysis of the evolution of *online social systems*, mainly through the lens of Computational Social Science. *Social bonding, homophily, influence, social attention, popularity & quality of online content, information spreading, social status, link prediction, and conversational norms*, are some of the topics I have been studying lately. I’m also very interested in studying new recommender systems; I have worked closely with Flickr and Tumblr to develop content and link recommenders. More recently, I have been working in the area of urban informatics, designing new mapping services powered by sensorial perceptions of the urban environment, collected from social media. In the past I have been involved in the SocialSensor FP7 EU project, working on development of new tools for *computational journalism*. I also worked in the area of distributed system, developing the Likir framework, a secure and identity-aware DHT that can be used to build decentralized, privacy-aware online social networks.

PROJECTS

- **GoodCityLife** [2015-..] (www.goodcitylife.org). Projects in the area of urban informatics that strive for the supreme goal of cities: give people a good life.
- **Yahoo Gemini** [2015-2016] (advertising.yahoo.com/gemini). Advertisement relevance: retrieving the most relevant ads to a search query.
- **Tumblr** [2015-2016] (www.tumblr.com). Design and development of the new blog recommendation service.
- **Flickr** [2013-2015] (www.flickr.com). Design and development of the new “who to follow” recommendation service and of photo recommenders.
- **SocialSensor** [2012-2014] (www.socialsensor.eu). FP7 European project about processing big streams from social media data and multimedia to discover trends, events, influencers, and interesting media content. Led the work of Yahoo in the consortium.
- **Truthy** [2011] (www.truthy.indiana.edu). Web service for the visualization of the dynamics of twitter mentions, retweets and hashtag co-occurrence. Opensourced on github (github.com/WICI/fastviz).
- **Likir** [2008-2010] (likir.di.unito.it). Secure DHT and applications on top of it.

GRANTS AND AWARDS

Fellowship at the ISI Foundation Torino for the years 2016-2019.

Yahoo Labs **25.000\$** academic grant for the project proposal “*Automation of Flickr photos recommendation on mobile devices*”, written in collaboration with Rossano Schifanella and Ayman Shamma.

Yahoo Labs **20.000\$** academic grant for the project proposal “*Exploration of multiplex graphs for recommendation of heterogeneous items*”, written in collaboration with Rossano Schifanella and Francesco Gullo.

WICI Data Challenge 2013 **10.000\$** prize for the work “*Fast visualization of relevant portions of large dynamic networks*”.

EVENT ORGANIZATION AND SCHOLARLY SERVICE

Event organization

- General Chair of SocInfo’14.
- Social media track chair at UMAP’17
- Social media track chair at HT’17
- Workshop Chair of ICWSM’15.
- Tutorial Chair of ICWSM’16.
- Organizer of the SNOW workshop at WWW in 2013, 2016, and 2017.
- Organizer of the London chapter of DataBeers from 2015.

Program committee

WWW 2012-2017, WSDM 2013-2014, ICWSM 2013-2017, CIKM 2012-2013, ACM MM 2013-2015, ACM MM Grand Challenge 2013, WebSci 2014-2015, HT 2014, ASONAM 2015, MediaEval 2013. Reviewer for several journals including PlosOne, ComCom, JSS.

PRESS COVERAGE (SELECTED)

About 200 news articles have been published around the work done in the last 5 years.

- “London stinkmap could change urban planning”. Wired, Jun 2015.
- “In World of Email, ASAP Is Relative”. WSJ, Oct 2015.
- “Behind The Numbers: Predicting Consumer Behavior”. WSJ, Oct 2015.
- “Computational Aesthetics Algorithm Spots Beauty That Humans Overlook”. MIT Tech Review, May 2015.
- “The Shortest Paths to Happiness. Literally”. TED Ideas, Feb 2015.
- “The Shortest Path to Happiness”. BBC Radio, Oct 2014.
- “Experimental Map Finds Scenic Route”. ABC Sep 2014.
- “How Yahoo Research Labs Studies Culture as a Formal Computational Concept”. MIT Tech Review, Aug 2014.
- “We Need This: A Maps App That Algorithmically Finds You the Scenic Route”.

	<ul style="list-style-type: none"> Wired, Jul 2014. “Quiet Socialbot Quickly Gains a Following”. New Scientist, Mar 2011.
TEACHING ACTIVITY	<ul style="list-style-type: none"> 2009-2010 - University of Turin: Lab instructor for the class “Security Lab” 2010 - ENGIM: Instructor for the class “Technical programming - Internet programming and JSP”
PROGRAMMING SKILLS	<ul style="list-style-type: none"> <i>Big data analytics</i>: Hadoop, Pig, Hive <i>Graph mining tools</i>: iGraph, NetworkX, GePhi, Pajek <i>Machine Learning</i>: Scikit-learn, Weka, Mallet, Mahout <i>Languages</i>: Working mainly with Python and Java. Experience with SQL, C, PHP, JSP, Matlab, JavaScript, UNIX shell scripting, Pascal, OCaml, PROLOG
LANGUAGE KNOWLEDGE	<p>Italian: native language</p> <p>English: fluent written and spoken (Cambridge PET <i>with merit</i>)</p> <p>Spanish: basic written and spoken</p>

- BOOKS L. M. Aiello, D. McFarland (eds.) “Proceedings of the 6th International Conference on Social Informatics”, November 2014.
- BOOK CHAPTERS L. M. Aiello “Group types in social media”. **User Community Discovery**, Springer. Nov 2015.
- JOURNAL PUBLICATIONS P. Molino, L. M. Aiello, P. Lops “Social Question Answering: Textual, User, and Network Features for Best Answer Prediction”. *ACM Transactions on Information Systems (TOIS)*. Oct 2016
- P. Micholia, M. Karaliopoulos, I. Koutsopoulos, L.M. Aiello, G. De Francisci Morales, D. Quercia “Incentivizing social media users for mobile crowdsourcing”. *Springer International Journal of Human-Computer Studies (IJHCM)*. Sep 2016
- C. A. Davis, G. L. Ciampaglia, L.M. Aiello, et al, “OSoMe: The IUNI Observatory on Social Media”. **PeerJ**. May 2016.
- X. Shuai, Neil O’Hare, L. M. Aiello, A. Jaimes, “Predicting Celebrity Attendees at Public Events using Stock Photo Metadata”. *Multimedia tools and applications*. Dec 2014 [I.F. **1.058**]
- D. Martin-Borregon, L. M. Aiello, P. Grabowicz, A. Jaimes, R. Baeza-Yates “Characterization of online groups along space, time, and social dimensions”. **EPJ Data Science**. Jan 2014
- P. Grabowicz, L. M. Aiello, F. Menczer “Fast filtering and animation of large dynamic networks”. **EPJ Data Science**. January 2014
- C. Vaca-Ruiz, L. M. Aiello, A. Jaimes “Modeling dynamics of attention in social media with user efficiency”. **EPJ Data Science**. Jan 2014
- C. Vaca-Ruiz, D. Quercia, L. M. Aiello, P. Fraternali “*Tracking Human Migration from Online Attention*”. **Citizen in Sensor Networks**. Jan 2014
- L. M. Aiello, G. Petkos, C. Martin, D. Corney, S. Papadopoulos, R. Skraba, A. Goker, Y. Kompatsiaris, A. Jaimes “*Sensing trending topics in Twitter*”. **IEEE Transactions on Multimedia**. Jun 2013. [I.F. **1.935**]
- L. M. Aiello, A. Barrat, C. Cattuto, R. Schifanella, G. Ruffo. “*Link creation and information spreading over social and communication ties in aNobii*”. **EPJ data science**. Dec 2012
- L. M. Aiello, A. Barrat, R. Schifanella, C. Cattuto, B. Markines, F. Menczer. “*Friendship prediction and homophily in social media*” *ACM Transactions on the Web (TWEB)*. May 2012 [I.F. **1.909**]
- L. M. Aiello, G. Ruffo. “*LotusNet: tunable privacy for distributed online social network services*” **Computer Communications**, Elsevier. Jan 2012 [I.F. **0.815**]
- L. M. Aiello, G. Ruffo. “*Contextual tag inference*” *ACM Transactions on Multimedia Computing, Communications and Applications (TOMCCAP)*. Oct 2011 [I.F. **1.400**]
- L. M. Aiello, M. Milanesio, G. Ruffo, R. Schifanella. “*An identity-based approach to secure P2P applications with Likir*” **Peer-to-Peer Networking and Applications**, Springer. Aug 2011 [I.F. **0.417**]

- F. Kooti, M. Grbovic, L. M. Aiello, N. Djuric, V. Radosavljevic, K. Lerman “Analyzing the Ride-sharing Economy” **WWW’17**: International Worlds Wide Web Conference (industrial track), Perth, Australia, 2017
- L. M. Aiello, N. Barbieri “Evolution of Ego-networks in Social Media with Link Recommendations” **WSDM’17**: The 10th ACM Conference on Web Search and Data Mining, Cambridge, UK, 2017 [A.R. **16%**]
- F. Kooti, M. Grbovic, L. M. Aiello, E. Bax, K. Lerman “iPhones Digital Marketplace: Characterizing the Big Spenders” **WSDM’17**: The 10th ACM Conference on Web Search and Data Mining, Cambridge, UK, 2017 [A.R. **16%**]
- L. M. Aiello, I. Arapakis, R. Baeza-Yates, X. Bai, N. Barbieri, A. Mantrach, F. Silvestri “The Role of Relevance in Sponsored Search”. **CIKM’16**: The 25th ACM Conference on Information and Knowledge Management, Indianapolis, USA, 2016. [A.R. **23%**]
- L. M. Aiello, C. Lucchese, F. Silvestri “On the Behaviour of Deviant Communities in Online Social Networks” **ICWSM’16**: The 10th International Conference Web and Social Media, Cologne, Germany 2016 [A.R. **17%**]
- D. Quercia, L. M. Aiello, R. Schifanella. “The Emotional and Chromatic Layers of Urban Smells” **ICWSM’16**: The 10th International Conference Web and Social Media, Cologne, Germany 2016 [A.R. **17%**]
- F. Kooti, K. Lerman, L. M. Aiello, M. Grbovic, N. Djuric, V. Radosavljevic “Portrait of an Online Shopper: Understanding and Predicting Consumer Behavior” **WSDM’16**: ACM International Conference on Web Search and Data Mining, San Francisco, USA, 2016 [A.R. **18%**]
- M. Trevisiol, L. M. Aiello, P. Boldi, R. Blanco “Local Ranking Problem on the Browse-Graph” **SIGIR’15**: ACM International Conference on Research and Development in Information Retrieval, Santiago, Chile, 2015 [A.R. **20%**]
- R. Schifanella, M. Redi, L. M. Aiello. “*An Image is Worth More than a Thousand Favorites: Surfacing the Hidden Beauty of Flickr Pictures*”. **ICWSM’15**: 9th International Conference on the Web and Social Media, Oxford, UK, 2015. [A.R. **19%**]
- D. Quercia, R. Schifanella, L. M. Aiello, K. McLean. “*Smell and the City: The Digital Life of Urban Smellscapes*”. **ICWSM’15**: 9th International Conference on the Web and Social Media, Oxford, UK, 2015. [A.R. **19%**]
- F. Kooti, L. M. Aiello, K. Lerman, M. Grbovic, A. Mantrach. “*Evolution of Conversations in the Age of Email Overload*”. **WWW’15**: International Worlds Wide Web Conference, Firenze, Italy, 2015. [A.R. **14%**]
- D. Quercia, L. M. Aiello, R. Schifanella, A. Davis. “*The Digital Life of Walkable Streets*”. **WWW’15**: International Worlds Wide Web Conference, Firenze, Italy, 2015. [A.R. **14%**]
- M. Trevisiol, L. M. Aiello, R. Schifanella, A. Jaimes. “*Cold-start News Recommendation with Domain-dependent Browse Graph*”. **RecSys’14**: ACM Conference Series on Recommender Systems, Foster City, Silicon Valley, USA, 2014. [A.R. **23%**]
- D. Quercia, R. Schifanella, L.M. Aiello. “*The shortest path to happiness: Recommending beautiful, quiet, and happy routes in the city*”. **HT’14**: 25th ACM Conference on Hypertext and Social Media, Santiago, Chile, 2014. [A.R. **33%**]

- L. M. Aiello, R. Schifanella, B. State. “*Reading the Source Code of Social Ties*”. **Web-Sci’14**: ACM Conference on Web Science, Bloomington, IN, USA, 2014 [A.R. **20%**] **Best Presentation Award**
- G. Petkos, S. Papadopoulos, L. M. Aiello, R. Skraba, Y. Kompatsiaris. “*Soft Frequent Pattern Mining Approach for Textual Topic Detection*” **WIMS’14**: 4th International Conference on Web Intelligence, Mining and Semantics, Thessaloniki, Greece, 2014.
- C. Vaca-Ruiz, D. Quercia, L. M. Aiello, P. Fraternali. “*Taking Brazils Pulse: Tracking Growing Urban Economies from Online Attention*” **WWW’14**: 23rd International World Wide Web Conference, Web Science Track, Seoul, Korea, 2014 [A.R. **25%**]
- R. Garcia-Gavilanes, N. O’Hare, L. M. Aiello, A. Jaimes. “*Follow My Friends This Friday! An Analysis of Human-generated Friendship Recommendations*” **SocInfo’13**: International on Social Informatics, Kyoto, Japan 2013 [A.R. **25%**]. **Best Paper Award**
- C. Aslay, N. O’Hare, L. M. Aiello, A. Jaimes. “*Competition-Based Networks for Expert Finding*” (short) **SIGIR’13**: ACM International Conference on Research and Development in Information Retrieval, Dublin, Ireland 2013 [A.R. **30.5%**]
- S. Maniu, N. O’Hare, L. M. Aiello, L. Chiarandini, A. Jaimes. “*Search Behaviour on Photo Sharing Platforms*” **ICME’13**: IEEE International Conference on Multimedia and Expo, Sunnyvale, CA, USA 2013 [A.R. **12.7%**] **Best Paper Nomination**
- P. A. Grabowicz, L. M. Aiello, V. M. Eguiluz, A. Jaimes. “*Distinguishing Topical and Social Groups Based on Common Identity and Bond Theory*” **WSDM’13**: 6th ACM International Conference on Web Search and Data Mining, Rome, Italy 2013 [A.R. **19%**]
- N. O’Hare, L. M. Aiello, A. Jaimes. “*Predicting Participants in Public Events using Stock Photos*” (short) **Multimedia’12**: 20th ACM International Conference on Multimedia, Nara, Japan 2012 [A.R. **30%**]
- M. Trevisiol, L. Chiarandini, L. M. Aiello, A. Jaimes. “*Image Ranking Based on User Browsing Behavior*” **SIGIR’12**: ACM International Conference on Research and Development in Information Retrieval, Portland, OR, USA, 2012 [A.R. **20%**]
- L. M. Aiello, M. Deplano, R. Schifanella, G. Ruffo. “*People are Strange when you’re a Stranger: Impact and Influence of Bots on Social Networks*” **ICWSM’12**: 6th International Conference on Weblogs and Social Media, Dublin, IR, 2012 [A.R. **20%**] **Best Dataset Award** [<http://bit.ly/UyyMLU>].
- L. M. Aiello, D. Donato, U. Ozertem, F. Menczer. “*Behavior-driven clustering of queries into topics*” **CIKM’11**: Proceedings of the 13th ACM International Conference on Information and Knowledge Management, Glasgow, UK, 2011 [A.R. **15%**]
- R. Schifanella, L. M. Aiello, G. Ruffo. “*Tagging relations to achieve complex search goals*” **NWeSP’11**: Proceedings of the 7th International Conference on Next Generation Web Services Practices, Salamanca, SP, 2011 [A.R. **49%**]
- L. M. Aiello, A. Barrat, C. Cattuto, G. Ruffo, R. Schifanella. “*Link creation and profile alignment in the aNobii social network*” **SocialCom’10**: Proceedings of the 2nd IEEE International Conference on Social Computing, Minneapolis, Minnesota, 2010 [A.R. **13%**]

CONFERENCE
PUBLICATIONS
(CONT'D)

R. Fantacci, L. Maccari, L. Chisci, L. M. Aiello, M. Milanesio. “*Avoiding eclipse attacks on Kad/Kademlia: an identity based approach*” **ICC’09**: Proceedings of Communication and Information Systems Security Symposium, Dresden, Germany, 2009 [A.R. **35%**]

L. M. Aiello, M. Milanesio, G. Ruffo, R. Schifanella. “*Tempering Kademlia with a Robust Identity Based System*”. **P2P’08**: Proceedings of the 8th IEEE International Conference on Peer-to-Peer Computing, Aachen, Germany, 2008 [A.R. **20%**]

WORKSHOP
PUBLICATIONS

P. Molino, L. M. Aiello. “Distributed Representations for Semantic Matching in non-factoid Question Answering” **SMIR’14**: Workshop on semantic matching in information retrieval, Queensland, Australia, 2014

S. Papadopoulos, D. Corney, L. M. Aiello. “SNOW 2014 Data Challenge: Assessing the Performance of News Topic Detection Methods in Social Media” **SNOW’14**: Proceedings of the SNOW 2014 Data Challenge (co-located with WWW). Seoul, Korea, 2014

D. Corney, C. Martin, A. Goker, E. Spyromitros-Xioufis, S. Papadopoulos, L. M. Aiello, B. Thomee. “*SocialSensor: Finding Diverse Images at MediaEval 2013*”. **MediaEval’13**: MediaEval Benchmarking Initiative for Multimedia Evaluation - Retrieving Diverse Social Images, Barcelona, Spain 2013 [**3rd place, best idea award**]

L. Chiarandini, L. M. Aiello, N. O’Hare, A. Jaimes. “*Metro: Exploring Participation in Public Events*”. **SocInfo’13**: International on Social Informatics, Kyoto, Japan 2013 (demo paper)

L. M. Aiello, M. Milanesio, G. Ruffo, R. Schifanella. “*Tagging with DHARMA, a DHT-based Approach for Resource Mapping through Approximation*”. **HOTP2P’10**: 7th International Workshop on Hot Topics in Peer-to-Peer Systems, Atlanta, Georgia, 2010 [A.R. **34%**]

L. M. Aiello, G. Ruffo. “*Secure and Flexible Framework for Decentralized Social Network Services*”. **SESOC’10**: 1st IEEE International Workshop on Security and Social Networking, Mannheim, Germany, 2010 [A.R. **33%**]

PATENTS AND
DEFENSIVE
PUBLICATIONS

S. Osindero, F. Liu, G. Pesavento, M. Redi, L. M. Aiello “*A Method and System For Automated Discovery Of High-Quality Artists and Artistic Works*”. Filed patent, 2015.

L. M. Aiello, D. Quercia, R. Schifanella. “*A system for recommending pleasant routes from the sentiment of geo-tagged photographs*”. Filed patent, 2014.

L. M. Aiello, R. Schifanella, B. State. “*Decomposition of social relationships into domains of interactions*”. Filed patent, 2014.

M. Trevisiol, L. M. Aiello, L. Chiarandini, A. Jaimes. “*User Behavior Models Based On Source URL*”. Filed patent, 2012.

U. Ozertem, D. Donato, L. M. Aiello. “*Behavior-driven query clustering and topic model generation*”. Filed patent, 2011.

L. M. Aiello, N. O’Hare, A. Jaimes. “*Predicting Participants in Public Events using Stock Photos*”. Defensive publication, 2012.

L. M. Aiello, M. Trevisiol, L. Chiarandini, A. Jaimes. “*Detection of users and items categories using user browsing information*”. Defensive publication, 2012.

INVITED TALKS
(SELECTED)

- “The Quest for Urban Happiness”*. CSS Initiative at Queen Mary, London, UK, 2016
- “Social Interaction Types: a Cautionary Tale for Network Scientists”*. Theoretical Foundations for Statistical Network Analysis at TGM London, UK, 2016
- “The Science of Social Interactions”*. Science Crossroads, Torino, Italy, 2016
- “Four Principles of Applied Data Analysis”*. Applied Data Analysis class at EPFL, Zurich, Switzerland, 2016
- “Social Networks below the Surface: An Exploration of the Nature of Social Processes”*. ComplexNets, Marseille, France 2016
- “The Nature of Social Links”*. NetoNets, Seoul, Korea 2016
- “The Sensorial Map of the City”*. Workshop on Location and the Web (LocWeb) at WWW’16, Montreal, Canada 2016
- “A quest for urban happiness”*. Brainwash Festival, Amsterdam, Netherlands, 2015.
- “An Image is Worth More than a Thousand Likes”*. Databeers Torino, Italy, 2015.
- “Popularity and quality in social networks”*. School for advanced sciences, Luchon, France 2015.
- “How to keep industrial Research alive”*. NetSci Backstage, Zaragoza, Spain 2015.
- “Nuanced graph representation to improve recommendation: the case of browsing and social networks”*. 1st International Workshop on Social Personalisation (SP) at Hypertext, Santiago, Chile 2014.
- “Making sense of big social data through computational sociology”*. Big Dive, Torino, Italy 2014.
- “Decomposition of social ties into domains of interaction”*. International Workshop on Social Media and Culture (IWSC), KAIST, Daejeon, Korea, 2014.
- “Reading the Source Code of Social Ties”*. DOOCN satellite of the European Conference on Complex Systems (ECCS), Barcelona, Spain, 2013.
- “Supporting sociological theories with social media data mining”*. SocInfo, 4th International Conference on Social Informatics, Lausanne, Switzerland, 2012.
- “A glimpse on social influence and link prediction in OSNs”*. Workshop on data driven dynamical networks, École de Physique, Les Houches, France, 2010.
- “Embedding Identity in DHT Systems: Security, Reputation and Social Networking Management”*. 2nd EMANICS workshop on peer-to-peer management, University College London, United Kingdom, 2009.
- “Secure Distributed Applications: A Case Study”*. 2nd Italian Networking Workshop, Cortina D’Ampezzo, Italy, 2009.