Curriculum Vitæ

Michele Coscia

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Contact

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Professional Experience

- ITU Copenhagen, Copenhagen, Denmark
  Assistant Professor. July 2018 - present

- Harvard University, Cambridge, Massachusetts, U.S.A.
  Post-Doc Research Fellow. June 2012 - April 2018

    - Raised $124,220 from NSF (G1).
    - Publications: P15-25, J6-16, C1-2, B1, W1-2, N1, T2-3.

- University of Namur, Namur, Belgium
  FNRS Fellow. October 2015 - October 2017

- World Bank, Washington D.C.
  Consultant. September 2016 - September 2017

- ISTI-CNR, Pisa, Italy
  Associate Researcher. January 2009 - June 2015

    - Raised €45,000 from Google Fellowship (A1).
    - Publications: P1-14, J1-5, T1.

- ATALab, Lucca, Italy
  Analyst Programmer. March 2008 - July 2008

- Progetto Carrara, Carrara, Italy
  Human-Computer Interaction Consultant. April 2006 - September 2006

Education

- Ph.D., Computer Science, January 2009 - June 2012.
  University of Pisa, Pisa, Italy.
  Advisor: Dino Pedreschi
  Specialization: Machine learning, mining complex networks.

- Visiting Researcher, January 2011 - June 2012.
  Harvard University, Cambridge, Massachusetts, U.S.A.
  Host: Ricardo Hausmann.

- Visiting Scholar, April 2010 - November 2010.
  Northeastern University, Boston, Massachusetts, U.S.A.
  Host: Albert-László Barabási.

- M.S., Humanities Computing, October 2006 - October 2008.
  University of Pisa, Pisa, Italy.
  Specialization: Knowledge Management.

- B.S., Humanities Computing, October 2003 - October 2006.
  University of Pisa, Pisa, Italy.
  Specialization: Human-Computer Interaction.

Research Interests

Complex network analysis in networks with different types of relations, community discovery and mining algorithms. Extraction and analysis of knowledge from the web, for understanding the behavior of complex systems such as governments, cultural objects (memes), and international and local organizations.

Publications

Peer-reviewed journal papers.

J16 Coscia, M., Hamaguchi, K., Pinglo, M.E., and Giuffrida, A., Mapping the international health aid community using web data. In EPJ Data Science, 2018.

J15 Barone, M., and Coscia, M., Birds of a feather scam together: Trustworthiness homophily in a business network. In Social Networks, 2018.

J14 Coscia, M., Using arborescences to estimate hierarchicalness in directed complex networks. In PLoS One, 2018.

J13 Coscia, M., Popularity Spikes Hurt the Future Implementations of Protomemes. In Communications of the ACM, 2017.

J12 Coscia, M., and Hausmann, R., Evidence That Calls-Based and Mobility Networks Are Isomorphic. In PLoS One, 2015.

J11 Pennacchioli, D., Coscia, M., and Giannotti, F., Product Assortment and Customer Mobility. In EPJ Data Science, 2015.

J10 Pennacchioli, D., Coscia, M., Rinzivillo, S., Giannotti, F. and Pedreschi, D., The retail market as a complex system. In EPJ Data Science, 2014.

J9 Coscia, M., Average is Boring: How Similarity Kills a Meme's Success. In Scientific Reports, 2014.

J8 Yildirim, M. A. and Coscia, M., Using random walks to project bipartite networks into unipartite networks. In PLoS One, 2014.

J7 Coscia, M., Rossetti, G., Giannotti, F. and Pedreschi, D., Uncovering Hierarchical and Overlapping Communities with a Local-First Approach. In ACM Transactions on Knowledge Discovery from Data, 2014.

J6 Coscia, M., Hidalgo, C. A. and Hausmann, R., The Structure and Dynamics of International Development Assistance. In Journal of Globalization and Development, 2013.

J5 Berlingerio, M., Coscia, M., Giannotti, F., Monreale, A. and Pedreschi, D., Evolving Networks: Eras and Turning Points. In Intelligent Data Analysis Journal, 2013.

J4 Berlingerio, M., Coscia, M., Giannotti, F., Monreale, A. and Pedreschi, D., Multidimensional Networks: Foundations of Structural Analysis. In World Wide Web Journal, 2012.

J3 Rinzivillo, S., Mainardi, S., Pezzoni, F., Coscia, M., Giannotti, F., and Pedreschi, D., Discovering the Geographical Borders of Human Mobility. In KUIN journal, 2012.

J2 Coscia, M., Giannotti, F. and Pedreschi, D., A Classification for Community Discovery Methods in Complex Networks. In Statistical Analysis and Data Mining Journal, 2011.

J1 Berlingerio, M., Coscia, M., Giannotti, F., Monreale, A. and Pedreschi, D., The Pursuit of Hubbiness: analysis of hubs in large multidimensional networks. In Journal of Computational Science, 2011.

Peer-reviewed conference papers.

P25 Guidotti, R., and Coscia, M., On the Equivalence Between Community Discovery and Clustering. In International Conference on Smart Objects and Technologies for Social Good, 2017.

P24 Coscia, M., and Neffke, F., Network Backboning with Noisy Data. In International Conference on Data Engineering, 2017.

P23 Cintia, P., Coscia, M., and Pappalardo, L., The Haka Network: Evaluating Rugby Team Performance with Dynamic Graph Analysis. In ASONAM Workshop, 2016.

P22 Guidotti, R., Coscia, M., Pedreschi, D., and Pennacchioli, D., Going Beyond GDP to Nowcast Well-Being Using Retail Market Data. In NetSciX, 2016.

P21 Guidotti, R., Coscia, M., Pedreschi, D., and Pennacchioli, D., Behavioral Entropy and Profitability in Retail. In IEEE International Conference on Data Science and Advanced Analytics, 2015.

P20 Pennacchioli, D., Coscia, M., and Pedreschi, D., Overlap Versus Partition: Marketing Classification and Customer Profiling in Complex Networks of Products. In ICDE Workshop, 2014.

P19 Pennacchioli, D., Rossetti, G., Pappalardo, L., Giannotti, F., Pedreschi, D. and Coscia, M., The Three Dimensions of Social Prominence. In International Conference on Social Informatics, 2013.

P18 Pennacchioli, D., Coscia, M., Rinzivillo, S., Pedreschi, D. and Giannotti, F., Explaining the Product Range Effect in Purchase Data. In IEEE International Conference on Big Data, 2013.

P17 Coscia, M., Rossetti, G., Pennacchioli, D., Ceccarelli, D. and Giannotti, F., "You Know Because I Know": a Multidimensional Network Approach to Human Resources Problem. In Advances in Social Network Analysis and Mining, 2013.

P16 Coscia, M., Competition and Success in the Meme Pool: a Case Study on Quickmeme.com. In International Conference on Weblogs and Social Media, 2013.

P15 Coscia, M. and Rios, V., Knowing Where and How Criminal Organizations Operate Using Web Content. In ACM Conference on Information and Knowledge Management, 2012.

P14 Bachi, G., Coscia, M., Monreale, A. and Giannotti F., Classifying Trust/Distrust Relationships in Online Social Networks. In SocialCom, 2012.

P13 Coscia, M., Rossetti, G., Giannotti, F. and Pedreschi, D., DEMON: A Local-First Discovery Method for Overlapping Communities. In ACM SIGKDD Conference of Knowledge Discovery and Data Mining, 2012.

P12 Coscia, M., Rinzivillo, S., Giannotti, F. and Pedreschi, D., Optimal Spatial Resolution for the Analysis of Human Mobility. In International Conference on Advances in Social Network Analysis and Mining, 2012.

P11 Coscia, M., Giannotti, F. and Pedreschi, D., Towards Democratic Group Detection in Complex Networks. In SBP, 2012.

P10 Berlingerio, M., Coscia, M. and Giannotti, F., Finding Redundant and Complementary Communities in Multidimensional Networks. In ACM Conference on Information and Knowledge Management, 2011.

P9 Schich, M., Coscia, M., Exploring Co-Occurrence on a Meso and Global Level Using Network Analysis and Rule Mining. In Mining and Learning with Graphs workshop at ACM SIGKDD Conference of Knowledge Discovery and Data Mining, 2011.

P8 Berlingerio, M., Coscia, M., Giannotti, F., Finding and Characterizing Communities in Multidimensional Networks. In International Conference on Advances in Social Networks Analysis and Mining, 2011.

P7 Berlingerio, M., Coscia, M., Giannotti, F., Monreale, A. and Pedreschi, D., Foundations of Multidimensional Network Analysis. In International Conference on Advances in Social Networks Analysis and Mining, 2011.

P6 Cappelli, A., Coscia, M., Giannotti, F., Pedreschi, D. and Rinzivillo, S., The Social Network of Dante's Inferno. In Art, Humanities and Complex Networks at NetSci, 2010.

P5 Berlingerio, M., Coscia, M., Giannotti, F., Monreale, A. and Pedreschi, D., As Time Goes By: Discovering Eras in Evolving Social Networks. In Pacific-Asia Conference on Knowledge Discovery and Data Mining, 2010.

P4 Berlingerio, M., Coscia, M., Giannotti, F., Monreale, A. and Pedreschi, D., Towards Discovery of Eras in Social Networks. In M3SN Workshop, in conjunction with International Conference on Data Engineering, 2010.

P3 Berlingerio, M., Coscia, M. and Giannotti, F., Mining the Temporal Dimension of the Information Propagation. In International Symposium on Intelligent Data Analysis, 2009.

P2 Berlingerio, M., Coscia, M. and Giannotti, F., Mining the Information Propagation in a Network. In Sistemi Evoluti per Basi di Dati (Italian Symposium on Advanced Database Systems), 2009.

P1 Coscia, M., Giannotti, F. and Pensa R., Social Network Analysis as Knowledge Discovery process: a case study on Digital Bibliography. In International Conference on Advances in Social Networks Analysis and Mining, 2009.

Book Chapters.

C2 Coscia, M., Rinzivillo, S., Giannotti, F., and Pedreschi, D., Spatial and Temporal Evaluation of Network-Based Analysis of Human Mobility. In EB-SNAM, 2014.

C1 Coscia, M., Giannotti, F., and Pedreschi, D., Extracting and Inferring Communities via Link Analysis. In Encyclopedia of Social Network Analysis and Mining, 2014.

Books.

B1 Hausmann, R., Hidalgo, C., Bustos, S., Coscia, M., Chung, S., Jimenez, J., Simoes, A. and Yildirim, M., The Atlas of Economic Complexity. Center for International Development, Harvard University, http://atlas.media.mit.edu/, 2011.

Technical reports and working papers.

T3 Coscia M., Neffke F., and Hausmann R., Exploring the Uncharted Export: an Analysis of Tourism-Related Foreign Expenditure with International Spend Data. CID Faculty Working Paper No. 328, 2016.

T2 Coscia M., Neffke F., and Lora E., Report on the Poblacion Flotante of Bogota (DC). arXiv preprint arXiv:1603.05942, 2016.

T1 Berlingerio M., Coscia M., Giannotti F., Monreale A., Pedreschi D., Foundations of Multidimensional Network Analysis. ISTI Technical report 2010-TR-004, 2010.

Non-scientific publications.

N1 Ceccarelli, D. and Coscia, M., (in Italian) Boston-Milano andata e ritorno: il valore delle reti informali tra Universitá e azienda (Boston-Milan round trip: the value of informal networks between business and academia). In the Italian magazine "Persone e Conoscenze" (People and Knowledge) Casa Editrice Este, Milan, April 2011.

Grants

G1 $124,220. NSF Standard Grant #1216028. September 2012.

- Principal investigator: Ricardo Hausmann.
- Using Web Crawling and Complex Network Analysis to Understand Institutional Activity and Connectivity.

Dissertation

- Title: Multidimensional Network Analysis.
- Summary: A multidimensional network is a network in which there are different qualitative and quantitative relations. Traditional complex network analysis focused on networks with only one kind of relation. When multiple different relations are present at the same time, traditional complex network analysis cannot provide suitable analytical tools. We aim to provide such tools for multidimensional network analysis. We present the ubiquity of multidimensional networks highlighting the urgency and need of their use. Then, we tackle the foundations of the analysis of such structures. We look first at the basic extensions of a monodimensional network. Finally, we develop novel algorithms and frameworks for well-understood and useful problems, such as community discovery, temporal analysis, link prediction and more.
- Publications: P4, P5, P7, P8, P9, P10, J1, J2, J4, J5.

Teaching

- Teacher, "Network Analysis". Fall 2018.
  - IT University of Copenhagen.
  - Course Manager: Luca Rossi.
  - Around 50 students.

- Instructor, "Complex Networks: An Introduction". September 2014.
  - Kansas University.
  - In collaboration with Isabel Meirelles.
  - Held jointly with Digital Humanities Forum 2014.
  - Around 25 attendees.
- Teaching Assistant, "Web Mining and Analysis". Spring 2009.
  - University of Pisa.
  - In collaboration with Dino Pedreschi and Fabrizio Silvestri.
  - Responsible for a class of around 30 students.

Awards

A3 Honorary mention ERCIM Cor Baayen Award. September 2015.

A2 Nominee for the SIGKDD Doctoral Dissertation Award. Summer 2013.

A1 Google European Doctoral Fellowship in Social Computing. €45,000. October 2010.

Doctorate Thesis Advisees

- Viviana Viña. Ongoing.

- Riccardo Guidotti. Graduated Spring 2017.
  Publications: P21, P22.

- Diego Pennacchioli. Graduated Summer 2014.
  Publications: P18, P19, P20, J10.
  Landed a job at Vodafone Automotive.

Master Thesis Advisees

- Mauro Barone. Fall 2013.
  Publication: J15
  Landed a job at the Italian National Fiscal Agency.

- Katia Monni. Fall 2012.
  Publication: P20.

- Giacomo Bachi. Fall 2011.
  Publication: P14.
  Landed a job at ION Trading.

- Jenny Zambon. Fall 2011.
  Publication: J10.
  Landed a job at Méthode Srl.

- Filippo Volpini. Summer 2010.
  Publications: P8, P10.

- Riccardo Guidotti. Summer 2010.
  Landed a job as Ph.D Student at the University of Pisa.

- Umberto Tocci. Fall 2009.
  Landed a job at Il Sole 24 Ore.

Other Conference Presentations

- Martini, D., Loddo, I., Coscia, M., Managing Complexity in Bio-design Practice. In Communicating Complexity Conference, 2013.

- Schich, M., Coscia, M., An Emerging Big Picture of Classical Archaeology as a Complex System. In European Conference on Complex Systems, 2011.

- Schich, M. and Coscia, M., Untangling the Complex Overlap of Subject Themes in Classical Archaeology. Conference of Computer Applications and Quantitative Methods in Archaeology, 2011.

Professional Activities

- Co-Organizer of the Symposium on Networks of Networks, satellite event of the NetSci conference, with Gregorio D'Agostino and Antonio Scala – http://netonets.org/events/netonets2016/.

- Creator of the Symposium on Multiple Network Modeling, Analysis and Mining, satellite event of the NetSci conference, with Dino Pedreschi, Matteo Magnani, Luca Rossi, Guido Caldarelli and Przemyslaw Kazienko – http://multiplenetworks.netsci2014.net/.

- Served as reviewer in multiple NSF Small and Medium Funding Panels.

- Member, or former member, of the program committee of:

    - International World Wide Web Conference (WWW);
    - International Conference on Data Mining (ICDM);
    - International AAAI Conference on Web and Social Media (ICWSM);
    - International Conference on Computational Social Science (IC2S2);
    - International Conference on Social Informatics (SocInfo);
    - International School and Conference on Network Science (NetSci & NetSciX);
    - International Conference on Social Computing, Behavioral-Cultural Modeling, and Prediction (SBP);
    - International Conference on Advances in Social Networks Analysis and Mining (ASONAM).

- Reviewer for the journals:

    - European Physics Letters;
    - Transactions on Knowledge Discovery from Data;
    - Transactions on the Web;
    - Public Library of Science (PLoS) One;
    - Social Network Analysis and Mining;
    - Network Science.

- Reviewer for:

    - ACM SIGKDD Conference on Knowledge Discovery and Data Mining;
    - SIAM SDM International Conference of Data Mining;
    - IEEE International Conference on Data Engineering (ICDE);
    - International Joint Conference on Artificial Intelligence (IJCAI);
    - ACM Conference on Information and Knowledge Management (CIKM);
    - ACM International Conference on Web Search and Data Mining (WSDM).

- Involved in the development of the scientific dissemination websites:

  - The Atlas of Economic Complexity: http://atlas.cid.harvard.edu/.
  - The Aid Explorer: http://aidxp.cid-labs.com/.
  - Privacy Observatory Magazine: http://www.privacyobservatory.org/.

Technologies

- Programming languages: Python (plus Pandas, Django, Flask, Numpy, Scipy, IPython, Networkx, etc), Javascript (plus JQuery and D3), AWK (and general Bash programming), Java and C#.

- Programs: R, Stata, MatLAB / Octave, Cytoscape, Eclipse, Adobe Photoshop, Illustrator, Flash and Unity Engine.

- Other computer science related experiences: HTML and CSS, LaTeX, UNIX / Linux (mainly Ubuntu).

Personal

- Languages:

  - Native Italian speaker.
  - Fluent in English.
  - One year's instruction in Spanish. Official DELE degree.

Hobbies

- Writer. Published a collection of short stories (narrative fiction) in 2002.

- Cinephile, currently keeping a database of 6,000+ movies watched.

- Video game programmer.

- Creator and main contributor of the movie review website http://www.fiveobstructions.com/ (in Italian), now inactive.