Daniel M. Romero

Assistant Professor

University of Michigan
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EDUCATION

Ph.D., Applied Mathematics 2012
Cornell University (Ithaca, NY)
Advisor*:* Jon Kleinberg
Thesis*: Dynamics of Social Network Evolution and Information Diffusion*

M.S., Mathematics 2007
Arizona State University (Tempe, AZ)
Advisors*:* Carlos Castillo-Chavez and Svetlana Roudenko

B.S., Mathematics, *Summa Cum Laude* 2006
Arizona State University (Tempe, AZ)

RESEARCH INTERESTS

My main research interest is the empirical and theoretical analysis of Social and Information Networks. I am particularly interested in understanding the mechanisms involved in network evolution, information diffusion, and interactions among people on the Web and in complex organizations.

EMPLOYMENT

University of Michigan July 2015 – Present
School of Information
Complex Systems (by courtesy)
Computer Science and Engineering (by courtesy)
Assistant Professor

University of Michigan Jan 2014 – July 2015
School of Information
Research Fellow

Northwestern University June 201 – Dec. 2013
Northwestern Institute on Complex Systems

Postdoctoral Fellow

Cornell University Aug. 2007 - May 2012
Research Assistant

Microsoft Research May - Aug. 2011
Research Intern, Search Labs

Hewlett-Packard May - Aug. 2010
Research Intern, Social Computing Lab

Microsoft Research June - Aug. 2009
Research Intern, Microsoft Research New England

Hewlett-Packard May - Dec. 2008
Research Intern, Social Computing Lab

FELLOWSHIPS AND AWARDS

Best Paper Award for "Social Networks Under Stress" in the International World Wide Web Conference (WWW) 2016.

President's Postdoctoral Fellowship, University of Michigan, 2014

Sloan Fellowship, Cornell University, 2008-2011

Best poster award at for "Differences in the Mechanics of Information Diffusion Across Topics: Idioms, Political Hashtags, and Complex Contagion on Twitter" at Northwestern University Complexity Conference 2011

NSF IGERT (Integrative Graduate Education and Research Traineeship) Fellow, Cornell University, 2007-2008.

LSAMP-BD (Louis Stokes Alliance for Minority Participation Bridge to the Doctorate) Fellowship, Arizona State University, 2005-2007.

Charles Wexler Mathematics Award, Arizona State University, 2004.

Dean's Circle Scholarship, Arizona State University, 2004.

PUBLICATIONS

F. Zhang, D. Livneh, C. Budak, L. Robert, and **D.M. Romero**. "Crowd Development: The Interplay Between Crowd Evaluation and Collaborative Dynamics in Wikipedia." Proc. 21st ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW), 2018.

S. Mukherjee, **D.M. Romero**, B. Jones, and B. Uzzi, "The Nearly Universal Link Between the Age of Past Knowledge and Tomorrow's Breakthroughs in Science and Technology: The Hotspot." *Science Advances*, 2, 2017.

F. Zhang, D. Livneh, C. Budak, L. Robert, and **D.M. Romero**. "Shocking the Crowd: The Effect of Censorship Shocks on Chinese Wikipedia." Proc. 11th International AAAI Conference on Web and Social Media (ICWSM), 2017.

D. Maldeniya, A. Varghese, T. Stuart, and **D.M. Romero**. "The Role of Optimal Distinctiveness and Homophily in Online Dating." Proc. 11th International AAAI Conference on Web and Social Media (ICWSM), 2017.

I. Gomez-Lopez, P. Clarke, A.B. Hill, **D.M. Romero**, R. Goodspeed, V. Berrocal, V. Vydiswaran, and T.C. Veinot. "Using Social Media to Identify Sources of Healthy Food in Urban Neighborhoods." *Journal of Urban Health*, 2017.

D.M. Romero, K. Reinecke, and L. Robert. "The Influence of Early Respondents: Information Cascade Effects in Online Event Scheduling." Proc. 10th ACM Conference on Web Search and Data Mining (WSDM), 2017.

D.M. Romero, B. Uzzi, and J. Kleinberg. "Social Networks Under Stress." Proc. 25th ACM International World Wide Web Conference (WWW), 2016. (**Best Paper Award**)

* L. Robert and **D.M Romero**. "The Influence of Diversity and Experience on the Effects of Crowd Size." *Journal of the Association for Information Science and Technology* (JASIST), 2016.

D.M. Romero, R.I. Swaab, B. Uzzi, and A.D. Galinsky. "Mimicry is Presidential: Linguistic Style Matching in Presidential Debates and Improved Polling Numbers." *Personality and Social Psychology Bulletin*, Vol. 41(10) 1311-1319, 2015.

D.M. Romero, D. Huttenlocher, and J. Kleinberg. “Coordination and Efficiency in Decentralized Collaboration.” Proc. 9th International AAAI Conference on Weblogs and Social Media (ICWSM), 2015.

* L. Robert and **D.M. Romero.** "Crowd Size, Diversity and Performance." Proc. ACM Conference on Human Factors in Computing (CHI), 2015.

C. Kuehn, E.A. Martens, and **D.M. Romero**. "Critical Transitions in Social Network Activity." *Journal of Complex Networks*, 2(2), 141-152, 2014.

* N. Mishra, **D.M. Romero**, and P. Tsaparas. "Estimating the Relative Utility of Networks for Predicting User Activities." Proc. of the 22th ACM International Conference on Information and Knowledge Management (CIKM), 2013.

*** D.M. Romero**, C. Tan, and J. Ugander. "On the Interplay between Social and Topical Structure." Proc. 7th International AAAI Conference on Weblogs and Social Media (ICWSM), 2013.

D.M. Romero, B. Meeder, and J. Kleinberg "Differences in the Mechanics of Information Diffusion Across Topics: Idioms, Political Hashtags, and Complex Contagion on Twitter." Proc. 20th ACM International World Wide Web Conference (WWW), 2011.

J. Cheng, **D.M. Romero**, B. Meeder, J. Kleinberg. "Predicting Reciprocity in Social Networks. " Proc. 3rd IEEE Conference on Social Computing (SocialCom), 2011.

D.M. Romero, B. Meeder, V. Barash, and J. Kleinberg "Maintaining Ties on Social Media Sites: The Competing Effects of Balance, Exchange, and Betweenness." Proc. 5th International AAAI Conference on Weblogs and Social Media (ICWSM), 2011.

D.M. Romero, W. Galuba, S. Asur, and B.A. Huberman "Influence and Passivity in Social Media." Proc. European Conference on Machine Learning and Knowledge Discovery in Databases (ECML PKDD), 2011

M.J. Brzozowski and **D.M. Romero** "Who Should I Follow? Recommending People in Directed Social Networks." Proc. 5th International AAAI Conference on Weblogs and Social Media (ICWSM), 2011.

D.M. Romero, C. Kribs-Zaleta, Anuj Mubayi, and Clara Orbe, “An Epidemiological Approach to the Spread of Third Political Parties,” *Discrete and Continuous Dynamical Systems - B*, 15, 707-738, 2011.

D.M. Romero and Jon Kleinberg, "The Directed Closure Process in Information Networks with an Analysis of Link Formation on Twitter," Proc. 4th International AAAI Conference on Weblogs and Social Media (ICWSM), 2010.

S. Yardi, **D. M. Romero**, G. Schoenebeck, and d. boyd, "Detecting spam in a Twitter network," *First Monday*, Volume 15, Number 1, 2010

* B.A. Huberman, **D.M. Romero**, and F. Wu, "Social networks that matter: Twitter under the microscope," *First Monday*, Volume 14, Number 1, 2009

* B.A. Huberman, **D.M. Romero**, and F. Wu, "Crowdsourcing, attention, and productivity," *Journal of Information Sciences*, volume 35, number 6, pp. 758-765, 2009.

* Author names are listed in alphabetical order.

IN PREPARATION

D.M. Romero, E.A. Horvat, and B. Uzzi, "The Wisdom of Small Crowds."

E. Platt and **D.M. Romero**, "Attack-Tolerance in Structured Networks via Multipath Routing." (Submitted)

M.R. Micheli, **D.M. Romero**, I. Talamo, B. Uzzi, "Topic diffusion and network structure in complex organizations: The example of hedge funds." (Submitted)

T. Ammari, S.Y. Schoenebeck, **D.M. Romero**, "Understanding Parenting Roles and Identities on Reddit." (Submitted)

R. Goodspeed, T. Veinot, X. Yan, J. Hardy, V. Berrocal, P. Clarke, **D.M. Romero**, V.G.V. Vydiswaran, R. Pildes, I. Gomez-Lopez, "Comparing the Data Quality of GPS Devices and Smartphones for Assessing Urban Activity Spaces." (Submitted)

J. Hardy, T. Veinot, X Yan, V. Berrocal, P. Clarke, RGoodspeed. I. Gomez-Lopez, **D.M. Romero**, V.G.V. Vydiswaran, "User Acceptance of Location-Tracking Technologies in Health Research: Implications for Study Design and Data Quality." (Submitted)

PATENTS

B.A. Huberman, S. Asur, **D.M. Romero**, and W. Galuba, "Determining characteristics of participants in a social network." US Patent 20,130,311,563

RESEARCH GRANTS

D.M. Romero (PI), C. Budak, L. Robert, "CHS: Small: Large-Scale Examination of the Impact of Shocks on Crowd Attributes and Performance in Collaborative Volunteering Systems," National Science Foundation ($499,463), September 2016 – August 2019. (Principal Investigator).

T.C. Veinot (PI), V. Berrocal, P. Clarke, R. Goodspeed, and **D.M. Romero**, "A 'Big Data' Approach to Understanding Neighborhood Effects in Chronic Illness Disparities," Social Sciences Annual Institute Round 6 ($94,948) and Sloan & Moore Foundations ($60,000), May 2015 – April 2016. (Co-investigator).

Ph.D. PRIMARY ADVISOR

Ed Platt (Pre-candidate)
Danaja Maldeniya (Pre-Candidate)
Hao Peng (Pre-candidate, co-advised with Ceren Budak)

DISSERTATION COMMITTEE MEMBER

Cheng Li, (Ph.D. 2017 School of Information) – Dissertation: "End-to-end Learning for Mining Text and Network Data"

Pin-Yu Chen, (Ph.D. 2016 Electrical Engineering and Computer Science) – Dissertation: "Analysis and Actions on Graph Data"

INVITED SCHOLARLY PRESENTATIONS

Keynote at the Third International Conference on Computational Social Science (IC2S2): "Examining the effects of exogenous shocks on social networks and the collaborative dynamics in organizations and crowds", Cologne, Germany 2017

Invited talk at the Workshop on Social Media and Demographic Research: "The Role of Optimal Distinctiveness and Homophily in Online Dating", Montreal, Canada 2017.

Invited talk at the Symposium on Computational Social Science: "Examining the effects of exogenous shocks on social networks and the collaborative dynamics in organizations and crowds", ETH Zurich, Switzerland 2017

Invited talk at Ford Motor Company: "Examining the effects of exogenous shocks on social networks and the collaborative dynamics in organizations and crowds", Dearborn, MI 2017

Institute for Pure and Applied Mathematics (IPAM): Invited talk on "Social Networks Under Stress" UCLA, Los Angeles, CA 2016

Management & Organizations Seminar: Invited talk on "Structure and Content Changes in Social Networks Under Stress" Northwestern University, Evanston, IL 2015

Complex Systems Seminar: Invited talk on "Structure and Content Changes in Social Networks Under Stress" University of Michigan, Ann Arbor, MI 2015

WebSci 2014: Invited talk on "Analyzing the Frontiers of Science." The web of scientific knowledge Workshop. Bloomington, IN

NetSci 2014: Invited talk on "Analyzing the Frontiers of Science." Cooperative Team Networks Workshop. Berkeley, CA

Michigan Interactive & Social Computing Seminar (MISC): Invited talk on "On-line Information Diffusion: From General Principles to Sources of Variation." University of Michigan, Ann Arbor, MI 2014

Applied and Interdisciplinary Mathematics Seminar (AIM): Invited talk on "Understanding Social Behaviors through the Lens of Online Activities." University of Michigan, Ann Arbor, MI 2014

INFORMS 2013: Invited talk on "Expert Communication Networks for Market Change Predictions." Minneapolis, MN.

Research Carnival at Yahoo! Research 2011: Invited talk on "Differences in the Mechanics of Information Diffusion Across Topics: Idioms, Political Hashtags, and Complex Contagion on Twitter." Bangalore, India

OTHER SCHOLARLY PRESENTATIONS

Second International Conference on Computational Social Science (IC2S2): "Social Networks Under Stress", Evanston, IL 2016

Conference on Complex Systems (CCS): "Social Networks Under Stress", Tempe, AZ 2015

SIAM Conference on Computational Science and Engineering: Invited talk in "Social Networks Under Stress" Salt Lake City, UT 2015

Northwestern University Department of Communication Studies: Invited talk on "Temporal Dynamics of Communication Networks: Trade-Offs, External Shocks, and Efficiency" Evanston, IL 2014

Management of Organizations Seminar: Invited talk on "Temporal Dynamics of Communication Networks: Trade-Offs, External Shocks, and Efficiency" University of California, Berkeley, CA 2014

Artificial Intelligence Seminar: "Temporal Dynamics of Communication Networks: Trade-Offs, External Shocks, and Efficiency" Cornell University, Ithaca, NY 2014

SciTs 2014: "Analyzing the Frontiers of Science." Austin, TX

NetSci 2014: "Predicting Group Decisions from Communication Structure." Berkeley, CA

NetSci 2014: "Estimating the Relative Utility of Networks for Predicting User Activities" Multiple Network Modeling, Analysis and Mining Workshop. Berkeley, CA

NetSci 2013: "Expert Communication Networks for Market Change Predictions." Copenhagen, Denmark.

AMS/MAA Joint Meeting 2006. San Antonio, Texas.

Blackwell-Tapia Conference (IMA Institute at the University of Minnesota). Minneapolis, Minnesota 2006

Society for the Advancement of Chicanos and Native Americans in the Sciences (SACNAS) National Conference. Denver, Colorado 2005

American Mathematical Society (AMS) Mathfest. Albuquerque, New Mexico 2005

PROFESSIONAL SERVICE

Editorial Board Member: Applied Network Science Journal

Program Committee: WWW (2011-2013, 2015-2018), ICWSM (2013, 2016, 2017), WSDM (2018), NetSci (2017), HCOMP (2016), HT (2012-2015), Web Science (2013-2015), Social Com (2012), DNA-SDM (2012).

Reviewing: PNAS, Nature Human Behavior, Network Science, Scientific Reports, CHI 2017, CSCW 2015, Physics Letters A, EPJ Data Science, Data Mining and

Knowledge Discovery, New Media & Society, CHI 2013, Physica A, IEEE Transactions on Network Science and Engineering, Pervasive 2012, LANA Nonlinear Analysis: Modeling and Control, Information, ACM TIST Special Issue on Twitter, Journal of Marketing Communications Special Issue on Word of Mouth and Social Media.Journal of the Royal Society Interface

TEACHING EXPERIENCE

School of Information, University of Michigan Sept 2015 – Present
Classes: Models of Social Information Processing,
Doctoral Seminar on Information Diffusion in Social Networks,
Applied Social Network Analysis in Python (Coursera)

Mathematics Department, Ithaca College, Lecturer Jan. 2011– May 2012
Classes: Calculus II, Applied Calculus I, Business Statistics

Cornell Prison Education Program, Instructor Aug. 2009 – May 2010
Classes: High School Algebra I and II