

PROMOTION RECOMMENDATION
THE UNIVERSITY OF MICHIGAN
SCHOOL OF INFORMATION

Daniel M. Romero, assistant professor of information, School of Information, assistant professor of electrical engineering and computer science, College of Engineering, and assistant professor, of complex systems, College of Literature, Science, and the Arts, is recommended for promotion to associate professor of information, with tenure, School of Information, associate professor of electrical engineering and computer science, without tenure, College of Engineering, and associate professor of complex systems, without tenure, College of Literature, Science, and the Arts.

Academic Degrees:

Ph.D.	2012	Cornell University, Ithaca, NY
M.S.	2007	Arizona State University, Tempe, AZ
B.S.	2006	Arizona State University, Tempe, AZ

Professional Record:

2015 – present	Assistant Professor of Information, School of Information, University of Michigan
2015 – present	Assistant Professor of Electrical Engineering and Computer Science, College of Engineering, University of Michigan
2015 – present	Assistant Professor of Complex Systems, College of Literature, Science and the Arts, University of Michigan
2014 – 2015	President’s Post-doctoral Fellow, School of Information, University of Michigan
2011 – 2013	Post-doctoral Fellow, Northwestern Institute on Complex Systems, Northwestern University
2011	Research Intern, Search Labs, Microsoft Research
2010	Research Intern, Social Computing Lab, Hewlett-Packard
2009	Research Intern, Microsoft Research New England, Microsoft Research
2008	Research Intern, Social Computing Lab, Hewlett-Packard

Summary of Evaluation:

Teaching: Professor Romero is a committed teacher of diverse residential undergraduate and graduate students, as well an innovator in online teaching as evidenced by his receipt of Coursera’s Outstanding Educator Award for Innovation in 2018. Professor Romero describes his teaching philosophy as centered on inclusive teaching, which relies on interactive classroom experience combined with real world applications of theoretical material. He facilitates interactive experiments using MobLab software for game theory and demonstrations of network concepts using network link creation simulations, and research-based real-world examples that are customized to match student interests. He relies on student feedback to make changes to course materials and delivery mode. He also combines his research interests in social networks to conduct research on novel educational methods. Specifically, he developed a matching system that allows students to work on weekly assignments with a partner. This matching

system relies on self-reported network ties of students at the beginning of the semester. This provides a framework in which his teaching informs his research and vice versa. Professor Romero has taught three different residential courses at the School of Information so far (SI 301: Models of Social Information Processing, SI 370: Data Exploration, SI 710: Doctoral Seminar on Information Diffusion in Social Networks). His greatest impact has been on SI 301: Models of Social Information Processing which Professor Romero has taught since 2015. The course covers a diverse set of topics on social networks, game theory, and markets. He started teaching this course when the format changed to a larger lecture with weekly discussion sections led by GSIs. This led Professor Romero to rethink content and delivery in order to make it more accessible. He introduced many innovations (iClicker, Moblab, network simulations, programming assignments) and developed novel content for discussion sections.

Professor Romero has been extensively involved in mentoring undergraduate and graduate students by providing them with collaborative research opportunities in his research group. Professor Romero is the primary advisor for six doctoral students, two of whom have progressed to candidacy. He also supervises one post-doctoral fellow and is a mentor for a Michigan Data Science Fellow. In addition, he has been or is currently serving as a committee member for five School of Information students and two students in the College of Engineering's Electrical Engineering and Computer Science department. Professor Romero funded undergraduate students through a National Science Foundation's Research Experience for Undergraduates grant and has worked closely with five undergraduate students so far.

Research: Professor Romero's greatest impact has been his research contributions at the cutting edge of a new interdisciplinary field known as computational social science. In his research, he uses computational and data science techniques to analyze social dynamics in online social platforms with the goal of answering traditional social science questions regarding social systems and collective user behaviors. In turn, this generates insights about improving current online platforms. His ambitious research agenda focuses on analyzing and modeling online social networks; understanding collaborative crowdsourcing in online communities; and understanding the impact of shocks on social networks and the consequential impact on collective behaviors in these communities.

The most prominent example of Professor Romero's line of work concerning shocks to social networks is his paper, "Social Networks Under Stress" (The Web Conference (WWW), 2016, Best Paper Award). He and his co-authors studied how significant external events, or "shocks," are associated with the change of structures and communications of a social network. They analyzed a complete dataset that consists of millions of instant messages among the decision-makers in a large hedge fund and their network of outside contacts. They found that when price shocks occur, the communication within the organization displays a propensity for higher clustering, stronger ties, and an intensification of insider vs. outsider communication. They further found that changes in network structure can predict shifts of future collective behavior of the decision makers embedded in the social network, which included cognitive and affective processes, execution of new transactions, and local optimality of transactions better than prices.

Professor Romero's research is novel in its approach. He develops new methodological techniques, and uses longitudinal network data, a type of data which has become increasingly

available only as researchers have access to a growing amount of digital trace data (e.g., emails, text messages, follower and friend relationships, tweets and retweets). Professor Romero has emerged as a reputable and visible researcher in his community. Professor Romero's work has been cited 4,945 times according to Google Scholar on December 24, 2019, with an h-index of 17 and i10-index of 19. His citations include two papers that have been cited over 1,000 times, and one that has been cited 798 times. Professor Romero's work has also been recognized with extramural funding from the National Science Foundation and a Young Investigator award from the Air Force.

Recent and Significant Publications:

- 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.
- 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)
- 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.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

Service: Within the School of Information, Professor Romero served on the faculty search subcommittees for data science faculty in 2016-2017 and 2018-2019. He was elected by his UMSI faculty peers to the Dean's Advisory Committee in 2017-2018. Professor Romero is also the School of Information representative on the interdisciplinary Master of Science in Data Science Program Committee. He initiated and co-manages the weekly Data Science/ Computational Social Science seminar, which gathers an interdisciplinary group of students and faculty from the School of Information and across campus to present their research on data science related topics and receive first-hand feedback from their peers. The well-attended seminar has been held for six semesters.

Professor Romero has been involved in the campus-wide computational social science initiative. He has connected faculty, students, and units interested in computational social sciences, co-organizing symposiums and workshops in the field, and inviting and hosting external experts in related areas. In Complex Systems, he has engaged in a curriculum development collaboration with colleague Elizabeth Bruch. He also contributes to faculty meetings and faculty searches in Complex Systems.

Professor Romero's external service record has been focused on the emerging field of computational social science. He has served on the program committee of the top conferences in his field, such as The Web Conference (WWW), the International Conference on Web and Social Media (ICWSM), Web Search and Data Mining, and the Conference on Human Computation and Crowdsourcing. He has also been a reviewer for multiple prestigious journals and conference publications including *the Proceedings of the National Academy of Sciences*,

Scientific Reports, the Association for Computing Machinery (ACM) Conference on Human Factors in Computing Systems (CHI), the ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW), *Network Science*, *Science Advance*, the ACM's Transactions of the Web. With colleagues at Cornell, the University of Colorado, and Microsoft Research, he organized the first ICWSM workshop on "Beyond Online Data: Tackling Challenging Social Science Questions."

External Reviewers:

Reviewer A: "...[Professor Romero] has had a significant imprint on computational social science so far, and there is every reason to believe that he will continue to widen it in the future."

Reviewer B: "...[Professor] Romero is an outstanding researcher, as is evident by his numerous awards and prestigious publications, an excellent teacher, and a model citizen for the professional community. I wholeheartedly recommend him without the slightest reservation for an Associate Professor (with Tenure) position."

Reviewer C: "...[Professor] Romero has produced a wealth of highly important and original work in the area of social networks and (online) social behavior. He has firmly established a solid and remarkable reputation in the field reputation, and his case offers the best warranties for an exceptional future career. I enthusiastically endorse the granting of tenure and his promotion to associate professor."

Reviewer D: "...Prof[essor] Romero's scholarly contributions are strong. Throughout his academic career, he has demonstrated that he is able to identify interesting research problems, and fruitful methodological opportunities. He chooses to ask important research questions, and contextualizes his results appropriately in theory and in their practical implications."

Reviewer E: "[Professor Romero] is one of the stars in the area of on-line social networks and social media, with a remarkable track record of high-impact work and major visibility in the field. I believe that his position among the leaders in his professional [cohort], combined with his sustained production of research of the highest quality, makes for an easy case for promotion."

Reviewer F: "...[Professor Romero] ranks quite well relative to other computational social scientists in his cohort; among the top. He has done a lot of interesting, much cited work. He has rising stature within his field. He would be an easy decision for tenure at my institution."

Reviewer G: "...[Professor] Romero has been very successful with his research and I truly believe he will become even more successful in the future. In conclusion, I strongly support [Professor] Romero's application for promotion without reservation."

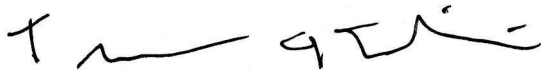
Reviewer H: "...Prof[essor] Daniel Romero has emerged as one of the very top researchers worldwide in this important research nexus, with an extensive track record of important publications. He is well-deserved to be a Tenured Associate Professor based on both the

background of his past achievements and the potential for what can be done next in this area. His application thus has my strongest recommendation.”

Reviewer I: “I strongly recommend [Professor] Romero for Promotion to associate professor with tenure. ... The bottom line on [Professor Romero] is that he is a rare and rising star.”

Summary of Recommendation:

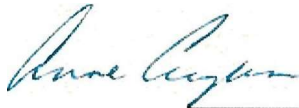
Professor Romero’s accomplishments in the areas of teaching, research, and service meet and exceed promotion requirements. Therefore, with the support of the Promotion and Tenure Committee of the School of Information and the executive committees in the College of Engineering, and the College of Literature, Science and the Arts, we enthusiastically recommend Daniel M. Romero for promotion to associate professor of information, with tenure, School of Information, associate professor of electrical engineering and computer science, without tenure, College of Engineering, and associate professor of complex systems, without tenure, College of Literature, Science, and the Arts.



Thomas A. Finholt
Dean, School of Information



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Robert J. Vlasic Dean of Engineering
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May 2020