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Education

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|--------------|--------------------|----------------------------------|------|
| Ph.D. | Societal Computing | Carnegie Mellon University | 2016 |
| M.S. | Societal Computing | Carnegie Mellon University | 2012 |
| B.S. | Computer Science | University of Michigan-Ann Arbor | 2010 |

Thesis: “Latent Cognitive Social Spaces: theory and methods for extracting prejudice from text”.

Committee Members: Kathleen Carley (SI, CMU; Chair), Jason Hong (HCII, CMU), Lynn Smith-Lovin (Sociology, Duke), Eric Xing (ML/LTI, CMU)

Publications

Conference

Joseph, K., Friedland, L., Tsur, O., Hobbs, W. & Lazer, D. (2017 - to appear). Modeling Annotation Context to Improve Stance Classification. *Empirical Methods in Natural Language Processing (EMNLP)*.

Hobbs, W., Friedland, L., **Joseph, K.**, Tsur, O., Wojcik, S. & Lazer, D. (2017). “Voters of the Year”: 19 Voters Who Were Unintentional Election Poll Sensors on Twitter. *ICWSM*

Joseph, K., Wei, W., & Carley, K.M. (2017). Girls rule, boys drool: Inferring semantic and affective relationships between identities from text. *CSCW*.

Carton, S.* , Helsby, J.* , **Joseph, K.*** , Mahmud, A.* , Park, Y.* , Walsh, J., Haynes, L., Cody, C., Patterson, E., Ghani, R. (2016). A Model for Improved Early Intervention to Reduce Adverse Police-Public Interactions. *KDD*. * - Equal contributions

Joseph, K., Wei, W. & Carley, K.M. (2016). Exploring patterns of identity usage in tweets: a new problem, solution and case study on Ferguson. *WWW 2016*.

Frankenstein, W., **Joseph, K.** & Carley, K.M. (2016). Contextualized Sentiment Analysis. *SBP 2016*

Wei, W., **Joseph, K.**, Liu, H. & Carley, K.M. (2015). The Fragility of Twitter Social Networks Against Suspended Users. *ASONAM 2015*.

Wei, W., **Joseph, K.**, Lo, W. & Carley, K.M. (2015). A Bayesian Graphical Model to Discover Latent Events from Twitter. *ICWSM 2015*.

Joseph, K. & Carley, K.M. (2015). Culture, Networks, Twitter and foursquare: Testing a Model of Cultural Conversion with Social Media Data. *ICWSM 2015. Short paper*

Morgan, G.M., **Joseph, K.** & Carley, K.M. (2015). Group-Based Transactive Memory to implement Computationally-Plausible Social Cognition in Agents. *BRiMS 2015*.

Lorince, J., **Joseph, K.** & Todd, P. (2015). Analysis of music tagging and listening patterns: Do tags really function as retrieval aids? *SBP 2015*.

Joseph, K., Landwehr, P.M. & Carley, K.M. (2014). Two 1% don't make a whole: Comparing simultaneous samples from Twitter's Streaming API. *SBP 2014*.

Joseph, K., Landwehr, P.M. & Carley, K.M. (2014). An Approach to Selecting Keywords to Track on Twitter During a Disaster. *ISCRAM 2014*.

Joseph, K., Wei, W. & Carley, K.M. (2013). An Agent-Based Model for Simultaneous Phone and SMS Traffic Over Time. *SBP 2013*.

Journal

Helsby, J., Carton, S., **Joseph, K.**, Mahmud, A., Park, Y., Navarrete, A., ... Ghani, R. (2017). Early Intervention Systems: Predicting Adverse Interactions Between Police and the Public. *Criminal Justice Policy Review*.

Benigni, M., **Joseph, K.** & Carley, K.M. (forthcoming). Covert Network Detection in Social Media: Uncovering the ISIS Supporting Network on Twitter. *PLOS One*.

Morgan, G.P., **Joseph, K.** & Carley, K.M. (forthcoming). The Power of Social Cognition. *Journal of Social Structure*.

Benigni, M., **Joseph, K.** & Carley, K.M. (forthcoming). Mining Online Communities to Inform Strategic Messaging: practical methods to identify community-level insights. *Computational and Mathematical Organizational Theory*

Wei, W., **Joseph, K.** & Carley, K.M. (2016). Exploring Characteristics of Suspended Users and Network Stability on Twitter. *Social Network Analysis and Mining*. 6(1), 51.

Gunturi, V.M.V., Shekhar, S., **Joseph, K.** & Carley, K.M. (2016). Scalable Computational Techniques for Centrality Metrics on Temporally Detailed Social Networks. *Machine Learning*. 1-37.

Joseph, K., Wei, W. & Benigni, M. & Carley, K.M. (2016). A social-event based approach to sentiment analysis of identities and behaviors in text. *Journal of Mathematical Sociology*. 1–30.

Joseph, K., Carley, K. M., Filonuk, D., Morgan, G. P., & Pfeffer, J. (2014). Arab Spring: from newspaper data to forecasting. *Social Network Analysis and Mining*, 4(1), 1–17.

Joseph, K., Carley, K. M., & Hong, J. I. (2014). Check-ins in “Blau Space”: Applying Blau’s Macrosociological Theory to Foursquare Check-ins from New York City. *ACM Transactions on Intelligent Systems and Technology*, 5(3), 46:1–46:22.

Joseph, K., Morgan, G. P., Martin, M. K., & Carley, K. M. (2014). On the Coevolution of Stereotype, Culture, and Social Relationships: An Agent-Based Model. In “*Social interaction- the bridge between micro and macro*” *Social Science Computer Review* ed. Bruce Edmonds and Flaminio Squazzoni. 32(3), 295–311.

Workshops and Book Chapters

Joseph, K. & Carley, K.M. (2016). Relating semantic similarity and semantic association to how humans label other people. *NLP+CSS 2016*.

Joseph, K., Tan, C.H. & Carley, K.M. (2012). Beyond “Local”, “Social” and “Category”: Clustering foursquare Users Using Latent “Topics”. *LBSN 2012, Workshop at UbiComp 2012*.

Joseph, K., Jose, R. & Carley, K.M. (2012). Leveraging Media Repertoires to Create New Social Ties. *SOTFTec 2012, Workshop at UbiComp 2012*.

Carley, K.M., Wei, W. & **Joseph, K.** (2015). High Dimensional Network Analysis. In “*Big Data Over Networks*”, Robert Cui (Eds). Cambridge University Press.

Working Papers/In Submission

Wei, W., **Joseph, K.** & Carley, K.M. (in submission). Inferring Infinite Social Event Clusters across Multiple Data Sources. *KDD*.

Wei, W., **Joseph, K.** & Carley, K.M. (in submission). Efficient Online Inference for Infinite Evolutionary Clusters with Applications to Evolutionary Social Event Discovery. *KDD*.

Joseph, K. Friedland, L., Tsur, O., Hobbs, W., & Lazer, D. (to be submitted to EMNLP). Improving annotations of social media text

Joseph, K. & Morgan, J.M. (in preparation). A socio-cognitive model of identity labeling.

Joseph, K., Benigni, M., Wei, W., Carley, K.M & Bloom, M. (in submission). War or Adaptation? Arab Spring Stories in News and Twitter. *IEEE Transactions on Computational Social Systems*.

Tutorials and Panels

Fred Morstatter, **Joseph, K.** & Sumeet Kumar. Tutorial on Exploring Public Events Using Social Media Data: Challenges in Extraction, Modeling and Analyzing. SBP 2016.

Panelist for "Getting comfortable with Big Data". APS 2017.

Selected Posters and Conference Presentations

Joseph, K.. The identity labeling problem. (2017). *Modeling Social Interactions: New Directions in Affect Control Theory*. Hanover, NH.

Joseph, K.. What can(t) data science do to prevent adverse police incidents? (2016). *Data Science for Social Good Conference*. Chicago, IL.

Joseph, K. Carton, S., Mahmud, A., Park, Y., Walsh, J., Haynes, L., Helsby, Cody, C., Patterson, E., Ghani, R. (2016). A Model for Improved Early Intervention to Reduce Adverse Police-Public Interactions. *IC²S²*. Chicago, IL

Joseph, K. & Carley, K.M. (2016). Latent Cognitive Social Spaces: Theory and Methods for Extracting Prejudice from Text *Sunbelt 2016*. Newport Beach, CA.

Joseph, K. & Carley, K.M. (2015). A social-event based approach to sentiment analysis of identities and behaviors in text. *ASA 2015*. Chicago, IL.

Joseph, K. & Carley, K.M. (2015). Culture, Networks, Twitter and foursquare: Testing a model of cultural conversion using social media data. *Computational Social Science Summit (CSSS 2015)*. Northwestern University, Chicago, IL.

Joseph, K. & Carley, K. M. (2012). Quantifying Meaning in Interaction on Different Communication Media. *INSNA Sunbelt Conference*. Ft. Myers, FL.

Joseph, K., Landwehr, P.M. & Carley, K. M. (2012). Using the Crowd to Mine the Crowd: Combining Ushahidi and Twitter Data from the Haitian Earthquake of 2010. *InfoSocial 2012*. Northwestern University, Chicago, IL.

McGhee-Hassrick, E., Carley, K.M, **Joseph, K.** & Leventhal, B. (2014). Can Reconfigured Schools Improve Disparities in Autism Treatments? *Conference on Complex Systems, Health Disparities & Population Health: Building Bridges*. Bethesda, MD.

Selected Technical Reports

Joseph, K. & Carley, K.M. (2012). Simulating Diffusion with Conflicting Knowledge. *Carnegie Mellon University, School of Computer Science, Institute for Software Research, Technical Report, CMU-ISR-12-111.*

Carley, K.M., Filonuk, D.T., **Joseph, K.**, Kowalchuck, M., Lanham, M.J. & Morgan, G.P. (2012). Construct User Guide. *Carnegie Mellon University, School of Computer Science, Institute for Software Research Technical Report, CMU-ISR-12-112.*

Martin, M.K., Morgan, G.P., **Joseph, K.** & Carley, K.M. (2010). Impact of Information Loss and Information Error on Network-enabled Decision-making. *Carnegie Mellon University, School of Computer Science, Institute for Software Research Technical Report, CMU-ISR-10-127.*

Invited Talks

“Annotating Social Media Data”. (2017). *Harmful Speech Workshop.* Harvard University, Cambridge, MA.

“Tutorial on text mining”. (2015). *Data Science for Social Good fellowship.* Chicago, IL, USA.

“Modeling the Coevolution and Coexistence of Stereotypes, Prejudices and Socio-cultural Structure”. (2014). *CMU Machine Learning and Social Science Seminar.* Pittsburgh, PA

Non-Peer Reviewed

Crystal Cody et al., “Building Better Early Intervention Systems,” *The Police Chief* 83 (August 2016): 20-25. <http://www.policechiefmagazine.org/building-better-early-intervention-systems>

David Lazer et al., “Combating Fake News: An Agenda for Research and Action,” <http://www.northeastern.edu/nulab/wp-content/uploads/2017/04/Combating-Fake-News-Agenda-for-Research.pdf>

Awards and Distinctions

CMU Gelfand Student Service Award. (2015). “Presented to students who share time, talent, energy and a passion for learning to make a difference for members of the external community.”

Data Science for Social Good fellow (2015). Worked on a project entitled “Early Warning Indicators for Adverse Police Interactions” (<https://dssg.uchicago.edu/project/early-intervention-system-for-adverse-police-interactions/>); Popular press coverage including ChicagoInno; 9/1/15, WBEZ Chicago; 8/21/15; White House blog 10/27/15; fivethirtyeight 3/9/16)

Winner, Datathon for Computational Social Science Summit. (2015). Replication code at https://github.com/kennyjoseph/csss15_datathon

Best Paper Award, for our paper “Beyond “Local”, “Social” and “Category”: Clustering foursquare Users Using Latent “Topics””. *LBSN 2012, Workshop at UbiComp 2012*

GuSH-Crosswalk Interdisciplinary Grant. (2014). For a project on Social Media Sentiment Analysis coding (\$1,000).

GuSH Grant. (2014). For a project on Identity Labeling (\$750).

Graduate Student Assembly Travel Grant. (2014,2015). To travel to the American Sociological Association’s Annual Conference (\$1000 total).

SBP Conference Student Travel Grant. (2013, 2014, 2015). Travel funding for presenters and conference committee members (\$900 total).

Teaching

Teaching Assistant - Spring 2015 and Sprint 2013 - for a graduate course on Dynamic Network Analysis

Teaching Assistant - June 2011-2016 - for the CASOS Summer Institute, an intensive, week-long course on network analysis, text mining and agent-based simulation

Service

Professional

Reviewer for Social, Behavioral Prediction Conference (SBP 2014, 2015, 2016), Journal of Computational Management and Organizational Theory, IEEE Transactions on Computational Social Systems, Journal on Social Network Analysis and Mining, ACM Transactions on Intelligent Systems and Technology, American Sociological Review, EACL, American Political Science Review, CSCW'18, Political Science Research and Methods, Advances in Complex Systems.

Program Committee NLP+CSS'17, SBP'17, ASONAM'17, CompleNet'18

Co-organizer, 1st International Workshop on Perceptual Biases and Social Media. A workshop at ICWSM'17 (pbsm2017.github.io)

Co-organizer, SBP'15 Grand Data Challenge. The challenge focused on the question: “how can we use publicly available data on the web and elsewhere to find social inequality and to aid the disadvantaged?” (<http://sbp-conference.org/sbp2015/challenge/>)

Co-organizer, SBP'16 Grand Data Challenge. The challenge focused on the use of Event-based datasets (e.g. GDELT, Phoenix) to answer a question of social and/or technical implications (<http://sbp-brims.org/2016/challenge/index.html>)

Selected Outreach Positions Held

Outreach coordinator for SCS4ALL. (2012-2014). SCS4ALL (scs4all.cs.cmu.edu) is a computer science related outreach program promoting equality in the field.

Head Instructor for the “Computational Thinking Activity”. (2011-2015). Twice-per-week course taught at the Pittsburgh Science and Technology Academy. More information at www.women.cs.cmu.edu/What/Outreach/adventures/

“Bias Busters” instructor. (2015). Lead sessions to spread information throughout the School of Computer Science at CMU about how unconscious bias effects decision making.

Technical Skills

Languages:

Extensive Knowledge: C++, C, Java, Python (incl. Cython), R, “Android”

Working Knowledge: Javascript, HTML/CSS, Swift

Have Used for Teaching: R, Python, Blockly, Alice, Arduino

“Tools”: MySQL, PostgreSQL, MongoDB, Apache Spark, Hadoop, IPython

Methods: Bayesian methods, agent-based modeling, social network analysis, latent-space network modeling