Dr. Emilio Ferrara
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Vitae: Dr. Ferrara's research focuses on studying techno-social systems, designing machine-learning frameworks to model and predict individual behavior, characterize information diffusion online, and predict crime and abuse. Ferrara has published over 60 articles on Machine Learning, Network Science, and Social Media Research, appeared in top venues including *Proceedings of the National Academy of Sciences*, *Communications of the ACM*, *Physical Review Letters*, etc. His research on social network abuse and crime prediction has been featured on major news outlets (TIME, BBC, NYT, etc.) and tech magazines (MIT Technology Review, New Scientist, etc). Dr. Ferrara has been appointed as the *2016 Senior Fellow* of *UCLA's Institute of Pure and Applied Mathematics*, he received the *IBM Watson Analytics 2015 VIP Influencer in Big Data* award, and was ranked 28th in the *Top 100 Big Data Experts to follow in 2016* list by Maptive.

Recent publication highlights:

- *On Facebook, most ties are weak*. Communications of the ACM (2014)
- *Optimal network modularity for information diffusion*. Physical Review Letters (2014)
- *Defining and identifying Sleeping Beauties in science*. Proceedings of the National Academy of Sciences (2015)
- *The rise of social bots*. Communications of the ACM (2016 – in press)
- *Latent space model for multi-modal social data*. ACM International World Wide Web Conference (2016)

Current and recent projects:

- (PI) *Detecting orchestrated information and synthetic account campaigns*. ONR (2015-present)
- (Senior Personnel) *Effectively forecasting evolving cyber threats*. IARPA (2016-present)
- (Senior Personnel) *SIGINT-based anticipation of future events*. IARPA (2016-present)
- (Senior Personnel) *Situational awareness for social media*. DARPA (2015-16)
- (Senior Personnel) *Detecting early signatures of persuasion in information cascades*. DARPA (2012-15)

Current research: I developed a strong portfolio of computational methods and analytical techniques to sift through Big Data. I led a scientific effort behind a DARPA-funded project to design a detection system to identify persuasion campaigns and social bots online. The deployed system ranked top 3 worldwide at the 2015 Twitter DARPA Challenge. Since joining USC's Information Sciences Institute, I work on research concerning system and machine learning methods to forecast cyber-threats in online environments, and design and develop system and algorithms for real-time analysis of intelligence data streams for national security applications.

Future directions: My long term vision is to develop analytical and computational frameworks to describe, understand, and predict human behavior from Big Data, especially where anomalous and criminal behaviors are concerned. The interdisciplinary nature of my work increasingly interconnects computational sciences with social and political sciences, to generate insights from data and transform them into actionable decisions. My plan is to build methods and machines that can help improve security of society at large, by supporting decision making, policy design and implementation.