

Biomedical Informatics Grand Rounds

Wednesday, Sept. 29, 2021, 3:00 pm – 4:00 pm

Human Well-Being Through the Phenotype of AI Language Analysis



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Remote Access

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Bio: Dr. H. Andrew Schwartz is the director of the Human Language Analysis Lab (HLAB) housed in the Computer Science Department at Stony Brook University (SUNY) where he is an Associate Professor. His interdisciplinary research focuses on human-centered natural language processing for the health and social sciences. Andrew is also a PI/co-founder for the World Well-Being Project, a multi-disciplinary consortium between the University of Pennsylvania, Stony Brook University, and Stanford University focused on developing large-scale language analyses that reveal and predict differences in health, personality, and well-being. Andrew is an active member of the fields of AI-natural language processing, psychology, and health informatics. He is the creator and one of the maintainers of the Differential Language Analysis ToolKit (DLATK), used in over 75 studies and by a variety of tech companies. His research often attracts public interest with articles featured in, e.g., The New York Times, USA Today, and The Washington Post. He is a 2020 Recipient of a DARPA Young Faculty Award. He received his Ph.D. in Computer Science from the University of Central Florida in 2011 with research on acquiring commonsense knowledge from the Web.

Abstract: In many ways, your device knows more about you than your most intimate friend but that could be in your best interest. Currently, data in health care is primarily physical or biological in nature. Understanding psychological and behavioral information is mostly limited to subjective reports or limited questionnaires. For the first time in human history, a substantial portion of our daily language behaviors is being recorded. With care taken for privacy and security, could this personal "digital phenotype", combined with robust methods, transform mental health care and ultimately save lives? I will first present a case for benefits in utilizing natural language processing (NLP), the artificial intelligence field associated with processing language, to provide a digital phenotype capable of predicting psychological attributes and future health-related behaviors. I will discuss work using social media posts to predict personality, diagnosis of depression, and future likelihood of relapse in addiction treatment. I will also cover ongoing work to make NLP more human-centered, solving technical challenges necessary to enable robust, powerful, and high accurate health care applications. Such modeling efforts consider that language is generated by people: (1) with particular demographic and psychological attributes, (2) at a particular point in time, and (3) within a larger social context. Combined with deep learning-based transformer networks, I will suggest that considering the people behind the data not only offers opportunities for improved accuracies but it could be fundamental for the positive role of AI in our increasingly digital world.

Educational Objects: Upon completion, participants should be able to:

- Convey the concept of measuring mental health and well-being based on unstructured data
- Convey the difference between an open vocabulary and a closed vocabulary approach.
- Explain how modern deep learning and natural language processing techniques might improve human assessment.

Disclosure Statement: In compliance with the ACCME Standards for Commercial Support, everyone who is in a position to control the content of an educational activity provided by the School of Medicine is expected to disclose to the audience any relevant financial relationships with any commercial interest that relates to the content of his/her presentation.

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