

# REPPERGER RESEARCH INTERN PROGRAM

RESEARCH PROJECT #: AFRL-RHW-21-01

## USING BIG DATA AND COGNITIVE FACTORS TO PREDICT SOCIAL-CYBER BEHAVIOR

**PROJECT DESCRIPTION:** Our social behavior and cognition is impacted by our globally connected world. Due to the technology revolution, the information environment is shaping the battlefield and enabling state and not state actors to exert influence through powerful social and political narratives, emotion amplification, and algorithm manipulation. Assessing influence on digital and social media requires sophisticated analytics in a noisy, always changing, “big data” landscape. This research topic focuses on both improving analytics in the information environment and developing ways to enhance the cognitive agility of the warfighter. The development of better algorithms and analytics can lead to better disaster relief coordination, detection of mis/ disinformation, and enhancement of deterrence strategies. There are several relevant questions: How can we predict the spread and evolution of information across different social media platforms (e.g., Twitter, Facebook, Reddit)? How can we characterize influence / persuasion on the different platforms and in different modalities? Related, how can we visualize social media data to relieve some of the cognitive burden for the user? What are the cognitive, social, and emotional mechanisms that increase susceptibility to digital deception? In addition, which computational approaches can model social-cyber phenomenon? Several disciplines are relevant such as cognitive biases, social influence, moral psychology, network science, machine learning, Natural Language Processing (NLP), data mining, computational behavioral science, etc. Students will be involved at all phases of research including hypothesis generation, experimental design, data analysis, and documentation. Original ideas are encouraged.

**ACADEMIC LEVEL:** Bachelors, Masters, PhD

### DISCIPLINE NEEDED:

- Computer, Information, and Data Sciences
  - Computer Science (general)
  - Data Science
  - Information Science and Technology
- Mathematics and Statistics
  - Applied Mathematics
  - Mathematics (General)
  - Operations Research
  - Probability and Statistics
- Social and Behavioral Sciences
  - Cognitive Science
  - Experimental Psychology
  - Industrial or Organizational Psychology
  - Psychology (General)
  - Social Psychology
  - Social Sciences: Other
  - Sociology (except Social Work)

**RESEARCH LOCATION:** Wright-Patterson AFB Dayton, OH

**RESEARCH ADVISER:** Kathleen Larson, PhD  
Experimental Psychology, University of Nevada, Las Vegas, 2017

Dr. Kathleen Larson is a Research Psychologist for the Air Force Research Laboratory's Mission Analytics Branch (711/ RHWAR). Dr. Larson's background is in cognitive psychology and she is currently interested in developing analytics and methods to leverage social media information to better understand human behavior.