



# RESEARCH OPPORTUNITY: Crew Recommender for Effective Work in Space

**Course Credit:**

Research Practicum registration #: 389 (COMM\_ST) or  
Independent Study registration #: 399-0 (IEMS)

**Duration:**

Spring Quarter 2017 (possibly extended to subsequent quarters)

**Location:**

SONIC Lab, Frances Searle Building 1-459  
2240 Campus Dr.  
Evanston, IL 60201

**Organization Overview:**

The Science of Networks in Communities (SONIC) research group advances social network theory and methodology through the development of cutting-edge techniques to understand and enable networks in diverse communities. For more information, please visit <http://sonic.northwestern.edu/about>

**Internship Description:**

This internship will focus on the design and development of an agent-based model to inform the selection of crew members for future NASA space missions. Agent-based models are a technique for understanding system- or group-level behavior by defining rules by which agents (i.e., crew members) interact with one another. Interns will assist the project through: (a) literature reviews to define local rules; (b) network analyses to test value of local rules; and (c) validation of the full model through simulation experiments. Respectively, these involve the use of Google Scholar and other related database search tools, R, and NetLogo. Interns will attend bi-weekly meetings to discuss progress between partner labs, and monthly meetings to discuss progress with NASA directly.

Interns will have the opportunity to build their understanding of fundamental network theories, learn and use key analytic techniques, and explore their own questions. At the end of the quarter (or internship), the intern will prepare an academic-style, conference-level poster. Mentoring and guidance will be provided in all aspects of the internship.

**Required Qualifications:**

This position is open to current undergraduates enrolled in an accredited degree-seeking program at Northwestern, except for those who hold Chinese citizenship due to the contract with NASA. Candidates must be able to demonstrate familiarity with R or other statistical software, interest in network theory, and familiarity with how to conduct research and present results. Time management is essential for this internship given the breadth of possible work that an intern can undertake based on their level of interest.

**Preferred Qualifications:**



Ideal candidates will have a strong interest in research on social systems and be interested in pursuing graduate school. Preference will be given to candidates with competitive GPAs, majors relevant to the research project, strong background in statistics, or prior experience with agent-based modeling or NetLogo.

**Application Instructions:**

Please send a resume and brief cover letter describing your interest in the position to Zachary Gibson (zgibson@u.northwestern.edu) in time for the closing of Spring Quarter registration on March 31<sup>st</sup>, 2017.