A Summer of Opportunity for Future Graduate Students

Four local high school students spent the month of July in the Network Science Lab learning the basics of Python programming, machine learning, and network science research. Working directly with IGERT trainees Rachel Redberg and Pedro Cisneros, these four future scientists proudly demonstrated their newfound proficiency in network analysis via a group project and presentation. Using word2vec, they graphed the Santa Barbara Municipal Code to show various word communities and shared their results with their teachers and colleagues.

2017 marked the second year of our partnership with the Santa Barbara High School Computer Science Club. We hope to continue and possibly expand the relationship next summer.

At the 2017 Undergraduate Research Symposium

Once again, we brought a group of five undergraduate interns into the Network Science Lab for a Research Experience for Undergraduates (REU) lasting from June until August. In addition to hands-on research in a lab-setting, interns attended weekly group meetings as well as seminars about topics relevant to graduate school and professional skills development. Students then presented their work at the 2017 Undergraduate Research Symposium. Here, we present the titles and authors of the four outstanding projects. Full abstracts are available on our website.

Five NS Undergraduates. Four NS Posters

**Mapping New York Times Coverage of the Department of Education with LDA Topic Modeling**
Emma Kerr, Sociology, UC Santa Barbara
Mentor: Devin Cornell

**Domain Specific Word Embeddings for Query Expansion**
Fernando Diaz, Computer Science, Cal Poly, SLO
Mentor: Yi Ding

**Important Edge Mining Inside Cores**
Tianyi Ma, Computer Science, UC Santa Barbara
Mentor: Sourav Medya

**The Milo Fiasco: Emotional Deployment, the Alt-Right, and Berkeley**
Jacob Gursky, Communications, U of Penn
Joseph Heide, Sociology, UC Santa Barbara
Mentor: Alex Kulick

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The interdisciplinary nature of our IGERT program requires our trainees to innovate outside their core expertise areas. To help realize innovative solutions to core research problems, the National Science Foundation has provided our IGERT with Competitive Innovation Incentive Funds (CIIF). To receive these awards, trainees must prepare a research proposal advocating for why their research demonstrates innovation. These proposals are then evaluated by a committee of faculty and put through a rigorous process of revision. The most successful proposals are then green lighted.

### Development of a Sensor Network for Measuring Soil Carbon Flux

This project, proposed by Elizabeth Forbes, Department of Ecology, Evolution, and Marine Biology, seeks to develop and implement a network of sensors throughout the Kenya Longterm Exposure Experiment (KLEE) to help collect soil carbon flux data 24 hours per day and throughout shifts in season, accurately assessing changes in soil carbon flux on a landscape scale. Ms. Forbes requested funds to build the microprocessors, noting that, although the technology itself is not necessarily novel, the implementation of the sensors in this manner, in her field, could yield innovative results. Ms. Forbes further proposes a collaboration with a researcher in Media Arts and Technology to create an installation where scientists and others can experience the impact of Carbon Dioxide change in new and unique ways.

For more information on Ms. Forbes’s research, visit Prof. Hillary Young’s lab website: [https://labs.eemb.ucsb.edu/young/hillary/index.html](https://labs.eemb.ucsb.edu/young/hillary/index.html)

### Populist Culture and Discourse in the Colombian Peace Process

Sociology trainee Devin Cornell proposed to investigate the Colombian peace process and 2016 referendum to explore how political beliefs changed over the last decade leading to the present moment, how Twitter connected broader political strategies and beliefs to an extent never seen before, and how major organizational leaders operationalized Twitter and built on other movements to promote discourse. For this project, Mr. Cornell novelly combines traditional sociological methods with more-advanced Belief Network Timeseries Analysis and semantic comparative analysis of social media in his research.

Mr. Cornell spent a portion of this summer traveling through Colombia interviewing major players in the Colombian Peace Process. He is currently analyzing the data and preparing a paper on his methods and results.

Colombian rebels carrying white flags during FARC disarmament ceremony. Photo from the New York Times.