Taylor Olson

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Education

Northwestern University, Evanston, IL

PhD Computer Science, Advisor: Ken Forbus, Qualitative Reasoning Group, 2018 - Present

University of Northern Iowa, Cedar Falls, IA

B.S., Computer Science, 2018

B.A., Mathematics, 2018

Minor in Philosophy

Kirkwood Community College, Cedar Rapids, IA

Mechanical Engineering, 2014

Current Research

Formal Theory of Norms

Developing a formal representation for social and moral norms.

Learning via Natural Language

Building machine learning methods for learning norms by reading. This process is two-fold:

- Developing rules and machine learning approaches for story understanding
- Deploying analogical processes to construct norm representations from what is read

Machine Ethics

Developing approaches for building ethical machines (handling moral dilemmas, assigning blame, etc.). This results in often revisiting the works of moral philosophers such as Kant, Hume, and Bentham.

Professional and Research Experience

PhD graduate student, Northwestern University, Qualitative Reasoning Group, Fall 2018 - Present

- Developing formal representations for social and moral norms
- Developing methods of learning by reading for intelligent systems

Research Intern, Harvard University, Computational and Applied Mathematics team, NSF Grant, Summer 2017

- Developed a pipeline and interface for rapid development of ensemble machine learning models. Including LSA, LDA, K-nearest neighbors, and Doc2Vec/Word2Vec.
- Built classification models for courses based on syllabi natural language text
- Built an academic course recommendation engine

Research Assistant, University of Northern Iowa, Bioinformatics, 2016-2017

- Translated compound IDs to their standard IDs for analysis
- Analyzed coverage of compound IDs and their adverse reactions, looking for patterns to be used for prediction

Programming Intern, Web and Software Development, VGM Forbin, Summer 2016

- Maintained staging sites
- Optimized python django sites and communicated with .NET and PHP teams.

Presentations

Artificial Intelligence in Curriculum Design, National Conference for McNair Scholars and Undergraduate Research, University of Maryland, March 2018

Invited Speaker, *Artificial Intelligence and Recommender Systems*, McNair Seminar Series, University of Northern Iowa, September 2017

Recommendation System Developer, Joint Research Experience for Undergraduates Summer Symposium, Harvard University, August 2017

Honors and Awards

Cognitive Science Fellowship, Northwestern University, 2018-2019

4th Place, Midwest Instruction and Computing Symposium Programming Contest, 2017

1st Place at site, ACM Programming Contest, 2016

Ronald E. McNair Postbaccalaureate Achievement Program, 2016

Student of the Month, Kirkwood Community College, 2014

NSF Engineering Scholarship, Kirkwood Community College, 2012-2014

Engineering project featured in local newspaper, 2012

All-Region Basketball, Kirkwood Community College, 2012-2014

Software

tRECS

Python NLP package and graphical interface for cleaning text data, building various statistical and vector space models, and creating recommender systems, with Janie Neal, Christiana Prater-Lee, and Eshita Nandini.

UMLS-Similarity-Viewer

Python package for graphical user interface to UMLS-Similarity, a similarity querying package built on top of the UMLS database of medicines, chemical compounds, and adverse drug reactions.