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 Transfer Program, 2014

Research Interests

I'm currently investigating normative theories, logical reasoning, and machine learning for ***creating artificial intelligence systems with social and moral competence.***

Publications

Olson, T. (2023). Towards Unifying the Descriptive and Prescriptive for Machine Ethics. In P. Wu , M. Salpukas, H. Wu, S. Ellsworth (Ed.). *Trolley Crash: Approaching Key Metrics for Ethical AI Practitioners, Researchers, and Policy Makers.* Elsevier. (forthcoming).

Olson, T. & Forbus, K. (2023). Mitigating Adversarial Norm Training With Moral Axioms. Proceedings of AAAI 2023. (preprint).

Olson, T. (2022). Towards Unifying the Descriptive and Prescriptive for Machine Ethics. *Proceedings of the AAAI 2022 Spring Symposium on "Approaches to Ethical Computing Metrics for Measuring AI's Proficiency and Competency for Ethical Reasoning"*.

Olson, T. & Forbus, K. (2021). Learning Norms via Natural Language Teachings. *Proceedings of the 9th Annual Conference on Advances in Cognitive Systems 2021.*

Talks and Presentations

Guest lecture, *Intelligent Tutoring Systems,* Intro to Cognitive Modeling, Northwestern University, Fall 2022

Talk, *Towards Unifying the Prescriptive and Descriptive for Machine Ethics*, AAAI-22 Spring Symposium on "Approaches to Ethical Computing Metrics for Measuring AI's Proficiency and Competency for Ethical Reasoning", Spring 2022.

Guest lecture, *Deontic Logic,* Knowledge Representation and Reasoning (KRR), Northwestern University, Winter 2022

Talk, *Learning Norms via Natural Language Teachings,* The Ninth Advances in Cognitive Systems (ACS) Conference, 2021

Guest lecture, *Intelligent Tutoring Systems,* Intro to Cognitive Modeling, Northwestern University, Fall 2021

Guest lecture, *Philosophy and KRR - Deontic Logic,* Knowledge Representation and Reasoning (KRR), Northwestern University, Winter 2021

Guest lecture, *Statistical Modeling - Introduction to Neural Networks,* Intro to Cognitive Modeling, Northwestern University, Fall 2020

Guest lecture, *Philosophy and KRR,* Knowledge Representation and Reasoning (KRR), Northwestern University, Winter 2020

Talk, *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

Talk, *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

Leadership and Outreach

Prior to joining Northwestern University, my pursuit was solely basketball and I eventually made it to the division 1 level as an undergrad. However, injuries required me to step away. Throughout my years as point guard and captain for my teams, I have learned (mostly by failing time and time again to get messages through to my teammates) to lead individuals from various backgrounds. These experiences led to many athletic accomplishments like being nationally ranked, making it to the NCAA tournament, and record-breaking team GPAs.

Prior to Covid, I was also a member of Morning Mentors, a NU student ran organization that provides tutoring in areas of STEM to local middle school students. We spent a few hours a week helping students with their homework or going through worksheets to improve on STEM skills.

During the spring quarter of 2022, I served as a mentor for a student's independent study on machine ethics. Lacking a computer science background, the student knew nothing about the sub-field of machine ethics. But as the quarter moved on, they began coming to meetings with fascinating ideas and questions. One day the student even stated they were now, "focusing again on interesting topics in their free time." They had once enjoyed pure mathematics but had been deterred by other's claims that it "lacks practical applications." Playing a role in in this student's move towards accepting their purer interests is an accomplishment I will forever cherish.

Growing up in a low-income single-parent household, exploring creative endeavors with no clear monetary reward was not high on the priority list. However, pursuing higher education has helped me gain the freedom necessary to explore my research. Thus, I am trying to illuminate this path for those who may not have the exposure or necessary resources. This has recently taken the form of providing financial support for education. In the summer of 2018, I had the opportunity to develop an automated tax system for an oil property LLC. I now use 100% of the profits each year to run a partial college scholarship for underrepresented student-athletes from my high school. Past recipients now attend and play basketball at colleges and universities across the country.

Software

Norms Reasoner

https://github.com/TeeOhh/Norms-Reasoner

An application and web interface for running our model of Moral Intuition and Construction on the Moral Conventional Transgression (MCT) Task experiment.

tRECS

https://github.com/TeeOhh/tRECS

Python NLP package and graphical interface capable of 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.