Ian S. Howell

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Education

Ph.D. student in Computer Science — 2018–2023 (expected)
University of Nebraska-Lincoln (UNL), Lincoln, NE — GPA 3.9
Advisor: Dr. Hongfeng Yu

M.S. student in Computer Science — 2018–2022 (expected)
University of Nebraska-Lincoln (UNL), Lincoln, NE — GPA 3.9
Advisors: Dr. Hongfeng Yu and Dr. Berthe Y. Choueiry

B.S., College of Arts and Sciences, with distinction — Fall 2014–Fall 2017
University of Nebraska-Lincoln (UNL), Lincoln, NE — GPA 3.7
Majors: Computer Science (focus on AI) and Mathematics
UNL Honors Program

Publications

E. Quint, **I. Howell**, G. Wirka, S. Scott, D. Tran "Safe Online Exploration with Nonlinear Constraints." In *Proceedings of the Workshop on Safe and Robust Control of Uncertain Systems* held at NeurIPS. 2022.

I. Howell, R.J. Woodward, B.Y. Choueiry, and H. Yu. "Visualizations to Summarize Search Behavior." In *Proceedings of the 26th International Conference on Principles and Practice of Constraint Programming.* 2020.

I. Howell, R.J. Woodward, B.Y. Choueiry, and H. Yu. A Qualitative Analysis of Search Behavior: A Visual Approach. In *Proceedings of the 2nd Workshop on Explainable Artificial Intelligence* held at IJCAI/ECAI. Pages 65–71. 2018.

I. Howell, R. Woodward, B.Y. Choueiry, and C. Bessiere. Solving Sudoku with Consistency: A Visual and Interactive Approach. In *Proceedings of the Twenty-Seventh International Joint Conference on Artificial Intelligence*, demonstrations track. Pages 5829–5831. 2018. `http://sudoku.unl.edu`.

Awards

D&F Eastman Scholarship	2016–2017
College of Arts & Sciences, Dean's List	2014–2017
UCARE Undergraduate Research Grant	2017
Susan T. Buffett Scholarship	2014–2017
UNL Honors Scholarship	2014–2017

Service

Vice President of the CSE Graduate Student Association	2019-2020
CSE Graduate Space and Facilities Representative	2018-2019
Neihardt Council Treasurer: Honors Dormitory Government	2015-2016
Volunteer Judge for VEX Robotics competitions	2014-2016

Academic Experience

Graduate Research Assistant, UNebraska Lincoln — Summer 2018 - Present
Advisor: Dr. Hongfeng Yu
Currently researching the differences between adversarial and contrastive examples when used to explain the behavior of deep learning classifiers. Further interested in the actionability of such contrastive examples, i.e. an example corresponds to realistic and feasible changes actors could take to reach an intended situation.

Graduate Research Assistant, UNebraska Lincoln — Summer 2018 - Present

Advisors: Dr. Hongfeng Yu, Dr. Berthe Choueiry
Researched the behavior of backtrack search when used to solve Constraint Satisfaction problems. Designed methods to automatically detect changes in behavior and visualizations to summarize these behaviors to users. Further, generated heatmaps of variable instantiation (usage) to elucidate further bottlenecks in the search procedure.

Graduate Teaching Assistant, UNebraska Lincoln Spring 2018
Course: CSCE 230 Computer Organization
Supervisor: Dr. Lisong Xu
Taught weekly recitation, reviewing digital logic concepts and basic processor details. Led an undergraduate laboratory and aided students in programming with assembly and building their own processors on FPGA boards.

Undergraduate Research Assistant, UNebraska Lincoln Spring 2017 - Fall 2017
Advisor: Dr. Berthe Choueiry
Designed and implemented an online Sudoku solver that illustrates the operations of ten consistency algorithms. Designed a new consistency property whose enforcement solves all known 9×9 puzzles. Tool regularly used in teaching and outreach.

Undergraduate Teaching Assistant, UNebraska Lincoln Fall 2016
Course: MATH 107 Calculus II
Supervisor: Dr. Brian Harbourne
Led weekly recitation, reviewed weekly material, and proctored and graded exams. Aided additional students in lower level courses through the Math Resource Center.

Work Experience

PhD Software Engineering Intern, NASA, Remote Summer 2021
Implemented interfaces between deep learning models and real-world simulation software that tests the durability of aircraft under stress. Developed data science tools to aid researchers designing new shape-memory alloys that exhibit target properties.

PhD Software Engineering Intern, Google, Remote Summer 2020
Designed and implemented the configuration and benchmark sections of a deep learning pipeline. Created an API to enable the analysis of multiple models and a web application that compares state-of-the-art models.

Software Engineering Intern, Hudl, Lincoln, NE Summer 2017
Designed and implemented front-end tools for querying video and motion-tracking data. Introduced state-caching to reduce the impact of expensive queries.

Senior Design, Legal Aid of Nebraska, Lincoln, NE 2016 - 2017
Led a squad of five in a year-long course. Designed and developed analytics tools to analyze legal performance. Performed code reviews and managed product integrity.

Mobile Development Internship, BuilderTrend, Omaha, NE Summer 2016
Incorporated static analysis into the mobile application build pipeline. Designed and implemented a Gantt chart generator for Android and iOS.

Design Studio, UN College of Law, Lincoln, NE 2015 - 2016
Aided in the design and implementation of an application suite for skill tracking. Responsible for server and iOS design and implementation.

Software Engineering Internship, Priority Data, Omaha, NE Summer 2015
Integrated AJAX methods into a classic ASP web application.

References

Dr. Hongfeng Yu yu@cse.unl.edu
Dr. Berthe Choueiry choueiry@cse.unl.edu