Benjamin Kane

585-748-7994 | bkane2@ur.rochester.edu | http://cs.rochester.edu/u/bkane2

EDUCATION

University of Rochester — Rochester, NY
PhD in Computer Science — **June 2019 – Present**

University of Rochester — Rochester, NY
BSc (Highest Distinction) in Computer Science, BA (Distinction) in Economics — **Aug 2015 – May 2019**

- Honors: *magna cum laude*, Dean's List (GPA: 3.92/4.00)
- Robotics Club, Undergraduate Finance & Economics Council
- Education Abroad: *University of Bristol* — Jan 2018 – Jun 2018

RESEARCH EXPERIENCE

Department of Computer Science, University of Rochester — Rochester, NY
Undergraduate Research Assistant — **May 2017 – May 2019**

- Assist in development of LISSA Virtual Human, a schema-based conversation agent used in studies on improving social interaction. Created Lisp code to extract context-independent "gist clauses" from user speech recognizer output, using feature-based pattern matching and transduction trees. Work on classifiers to predict turn-taking in LISSA dialogues using annotated transcript data and speech prosody.
- Annotate varied database of sentences with unscoped logical form (ULF) representations, create code to generate natural inferences from the ULF-coded sentences for various implicative and factive verbs.
- Aid in task of modeling spatial relations from natural speech in "blocks world" and "room world" domains, with goal of using 3D models in commonsense reasoning and story understanding.

TEACHING EXPERIENCE

Department of Physics, University of Rochester — Rochester, NY
Teaching Intern for Physics Mechanics — **Aug 2016 – Dec 2016**

- Led weekly workshop in Classical Mechanics, teaching important physics concepts and essential problem-solving skills to group of 14 students. Provided feedback on homework assignments and held weekly office hours.

Teaching Assistant for Knowledge Representation & Reasoning in AI — **Aug 2018 – Dec 2018**

- Supported students with complex topics in upper-level knowledge representation course, grade written homework assignments and Lisp programming assignments.

Teaching Assistant for Introduction to Artificial Intelligence — **Jan 2019 – May 2019**

- Supported students in learning introductory concepts in AI. Graded exams and open-ended projects. Led workshop for unit on knowledge representation, reasoning, and inference.

SKILLS AND INTERESTS

Computer Languages: Python, Common Lisp, Java, C, JavaScript/Node.js, SQL
Data Analysis: PyTorch, Numpy, Pandas, Scikit-learn, Matplotlib
Computer Tools: LaTeX, Photoshop, Git
Natural Languages: Spanish (limited working proficiency)
Interests: Isshin-ryū karate, Brazilian Jiu Jitsu, Music (flute, synthesizers), WesterosCraft (moderator team)

PUBLICATIONS AND PRESENTATIONS

Conference

- Razavi S. Z.; Kane B.; Schubert L. K. Investigating Linguistic and Semantic Features for Turn-Taking Prediction in Open-Domain Human-Computer Conversation. *Interspeech*, September 15-19, 2019, Graz, Austria.

Workshop

- Kim G. L.; Kane B.; Duong V.; Mendiratta M.; McGuire G.; Sackstein S.; Platonov G.; Schubert L. K. Generating Discourse Inferences from Unscoped Episodic Logical Formulas. *1st Int. Workshop on Designing Meaning Representations (DMR), at the 57th Annual Meeting of the Association for Computational Linguistics (ACL 2019)*, Aug 1, 2019, Florence, Italy.
- Razavi S. Z.; Schubert L. K.; Kane B.; Rafayet Ali M.; Van Orden K. A.; Ma T. Dialogue Design and Management for Multi-Session Casual Conversation with Older Adults. *Workshop on User-Aware Conversational Agents (User2Agent), at the 24th Int. Conf. on Intelligent User Interfaces (ACM IUI 2019).* March 17-20, 2019, Los Angeles, USA.

- Kane B.; Luo, J. Do the Communities We Choose Shape our Political Beliefs? A Study of the Politicization of Topics in Online Social Groups. *Workshop on Big Social Media Data Management and Analysis (BSMDMA), at the IEEE International Conference on Big Data.* December 10-13, 2018, Seattle, USA.

Preprint

- Platonov G.; Kane B.; Gindi A.; Schubert L. K. A Spoken Dialogue System for Spatial Question Answering in a Physical Blocks World. *arXiv:1911.02524*.

HONORS AND AWARDS

NSF Research Traineeship **Aug 2019 – May 2020**

- Receive training and financial support for data-enabled research into human behavior and its cognitive and neural mechanisms (e.g. machine learning, data mining, statistics, cognitive modelling, computational neuroscience).

SELECTED COURSES

Computer Science: Machine Learning, Natural Language Processing, Knowledge Representation & Reasoning in AI, Data Mining, Artificial Intelligence, Advanced Algorithms, Computer Organization, Programming Language Design & Implementation, Theory of Computation, Web Technologies, Databases & Cloud Concepts, Data Structures and Algorithms.
Economics, Physics, Mathematics: Game Theory, Behavioral Economics, Industrial Economics, Econometrics, Intermediate Microeconomics / Macroeconomics, Mechanics, Modern Physics, Statistics, Multidimensional Calculus, Linear Algebra.

ACADEMIC PROJECTS

- **Visulinga (Node.js):** developed prototype flashcard website aimed at helping individuals learn foreign languages through forming visual-semantic connections. Videos related to a word are generated automatically through web mining.
- **Planning Agent (Lisp):** created a simple planning agent for standard "blocks world" domain. Given a (virtual) table with blocks and a goal structure, the agent stacks blocks on table to achieve the structure at the lowest cost.
- **Machine Learning Implementation (Python):** implemented multilayer neural network backpropagation, EM algorithm for an aspect model, and a Hidden Markov Model. Analyzed performance and results of algorithms across various real-world datasets.