

Gene Louis Kim

2307 Wegmans Hall
Computer Science Department
University of Rochester
Rochester, NY 14627

Phone: 425-591-3215

Email: gkim21@cs.rochester.edu

URL: <http://www.cs.rochester.edu/u/gkim21>

Research Interests

Natural Language Understanding: Knowledge Representation and Inference, Computational Linguistics, and Information Extraction

Education

2017-present **PhD** in Computer Science
University of Rochester
Advisor: Lenhart Schubert
Estimated Graduation: Fall 2021

2015-2017 **MS** in Computer Science
University of Rochester
Advisor: Lenhart Schubert

2011-2015 **BS** in Computer Science
University of Washington
GPA: 3.92 – *magna cum laude*

Research Experience

2015-present **Research Assistant**
University of Rochester
Advisor: Lenhart Schubert

- *Corpus Annotation, Inference, and Parsing with a Formal Type Structure*
Annotation of a text corpus with a logical type structure inspired by Montagovian type theory in order to learn a statistical parser. The annotation captures semantic information that is unambiguous at the sentence-level and is compatible with further resolution into an expressive formal logic. The project also works to experimentally demonstrate the inference capabilities directly enabled by the annotation representation.
Publications: [2, 3, 4, 5, 7, 8] ([Project Website](#))
- *Semantic Interpretation Grammar Induction*
Develop methods for inducing a syntactic and a semantic grammar from data that are paired by an interpretation function, reflecting common assumptions in semantic theories from the linguistics literature (e.g. Montague semantics). These grammars provide distribution representations of language couched in compositional semantic theory and enables the investigation of grammars that are learned under particular semantic assumptions and datasets.
Publications: [1]

- *Verb Axiom Construction from WordNet*
Built a system to transduce axioms highly representative of verb gloss information from WordNet using the glosses, examples, and frames. This axiom representation overcame expressivity limitations of previous approaches while retaining competitive results in making intuitive lexical inferences.
Publications: [9]

2014-2015

Research Assistant

University of Washington
Advisor: Dan Weld

- *Language Model for Implicit Relation Extraction*
Developed a language model for extracting relations from text where the relation is not explicitly mentioned in the text. This was incorporated into the University of Washington submission to the TAC KBP cold start slotfilling task resulting in significant gains in F1 score.
Publications: [12]

Spring 2014

Research Assistant

University of Washington
Advisor: Michael Ernst

- *Format String Checker for Java*
Implemented parts of a checker that ensures the Java format string API will never throw exceptions at runtime with low annotation burden on the user and developed an artifact to evaluate the checker on real-world projects.
Publications: [10, 11]

Teaching & Mentorship Experience

University of Rochester

Spring 2021

Inclusive Computing Research Program Mentor

Fall 2016;
Fall 2017-pres.

Student Research Mentor

Helped orient research goals and interpret progress for undergraduate and master's students.
Supervisor: Lenhart Schubert

Spring 2021

Teaching Assistant, Machines and Consciousness (CSC 191/291)
Supervisor: Lenhart Schubert

2018

Master Teaching Assistant

Taught the graduate TA orientation workshop for the CS and EE departments with guidance from the university's Center for Excellence in Teaching & Learning.

Fall 2017

Teaching Assistant, Computational Introduction to Statistics (CSC 262/462)
Supervisor: Anthony Almudevar

Spring 2017

Teaching Assistant, Machines and Consciousness (CSC 191/291)
Supervisor: Lenhart Schubert

Fall 2016

Teaching Assistant, Logical Foundations of Artificial Intelligence (CSC 244/444)
Supervisor: Lenhart Schubert

University of Washington

Fall 2014

Teaching Assistant, Programming Languages and Implementation (CSE 413)
Supervisor: Hal Perkins

Spring 2013 **Teaching Assistant**, Data Structures and Algorithms (CSE 373)
Supervisor: Linda Shapiro

Professional Experience

- Summer 2019 **Software Engineering Intern**, *Facebook*, Seattle, WA
Mentor: Xiaochang Peng
Developed and evaluated a variety of multi-modal hate speech classifiers leading to improvements on examples with accompanying images and/or classification metadata.
- Summer 2017 **Software Engineering Intern**, *Google*, Mountain View, CA
Mentor: Ni Lao
Developed a QA model that scales to large texts by storing symbolic semantics of mentions generated by LSTMs in a key-value store which is trained using REINFORCE.
- Summer 2014 **Software Engineering Intern**, *Google*, Seattle, WA
Mentor: Donghwan Jeon
Undergraduate internship building a system that processes and displays product usage information at customer-level granularity.
- Summer 2013 **Software Engineering Intern**, *Whitepages, Inc.*, Seattle, WA
Mentor: Paul Kohan
Undergraduate internship building a system that aggregates and stores metadata of user generated content.

Awards & Grants

- 2018 *Heidelberg Laureate Forum Young Researcher*
1 of 200 young researchers worldwide selected to attend the forum on September 23-28, 2018.
- 2017 *Outstanding TA Award*, University of Rochester
- 2017 *Travel Grant*, by the National Science Foundation (NSF), for attending Computational Semantics Beyond Events and Roles Workshop (SemBEaR)
- 2015-2017 *Robert L. and Mary L. Sproull Fellowship*, University of Rochester
*The most prestigious fellowship awarded by the University of Rochester.
- 2011 *Academic Excellence Award*, University of Washington

Service & University Activities

- Reviewer**, IWCS 2021, EACL 2021, ACL 2020, EMNLP 2020, COLING 2020
- 2017-present **Big Picture Talk Series Organizer**, University of Rochester Computer Science Department
- 2018-2019 **Graduate Student Representative**, University of Rochester Computer Science Department
- 2018 **Program Committee Member**, Mid-Atlantic Student Colloquium on Speech, Language and Learning (MASC-SLL)
- 2016-2017 **Events Committee Member**, University of Rochester Computer Science Department
- 2016-2020 **Wind Symphony Member**, University of Rochester
- 2016-2020 **Brass Choir Member**, University of Rochester

Refereed Publications

- [1] Gene Louis Kim and Aaron Steven White. Montague grammar induction. In *Proceedings of the Semantics and Linguistic Theory 30*, pages 227–251, 2021.
- [2] Gene Louis Kim, Mandar Juvekar, Junis Ekmekciu, Viet Duong, and Lenhart Schubert. A (mostly) symbolic system for monotonic inference with unscoped episodic logical forms. In *Proceedings of the 1st and 2nd Workshops on Natural Logic Meets Machine Learning (NALOMA)*, pages 71–80, Groningen, the Netherlands (online), June 2021. Association for Computational Linguistics.
- [3] Gene Louis Kim, Viet Duong, Xin Lu, and Lenhart Schubert. A transition-based parser for unscoped episodic logical forms. In *Proceedings of the 14th International Conference on Computational Semantics (IWCS)*, pages 184–201, Groningen, The Netherlands (online), June 2021. Association for Computational Linguistics.
- [4] Gene Kim, Mandar Juvekar, and Lenhart Schubert. Monotonic inference for underspecified episodic logic. In *Proceedings of the Workshop on Natural Logic Meets Machine Learning (NALOMA)*, pages 26–40, Waltham, USA, July 2020. Association for Computational Linguistics.
- [5] Gene Louis Kim and Lenhart Schubert. A type-coherent, expressive representation as an initial step to language understanding. In *Proceedings of the 13th International Conference on Computational Semantics - Long Papers*, pages 13–30, Gothenburg, Sweden, May 2019. Association for Computational Linguistics.
- [6] Gene Louis Kim, Lane Lawley, and Lenhart Schubert. Towards natural language story understanding with rich logical schemas. In *Proceedings of the Sixth Workshop on Natural Language and Computer Science*, pages 11–22, Gothenburg, Sweden, May 2019. Association for Computational Linguistics.
- [7] Gene Kim, Benjamin Kane, Viet Duong, Muskaan Mendiratta, Graeme McGuire, Sophie Sackstein, Georgiy Platonov, and Lenhart Schubert. Generating discourse inferences from unscoped episodic logical formulas. In *Proceedings of the First International Workshop on Designing Meaning Representations*, pages 56–65, Florence, Italy, August 2019. Association for Computational Linguistics.
- [8] Gene Kim and Lenhart Schubert. Intension, attitude, and tense annotation in a high-fidelity semantic representation. In *Proceedings of the Workshop Computational Semantics Beyond Events and Roles*, pages 10–15, Valencia, Spain, April 2017. Association for Computational Linguistics.
- [9] Gene Kim and Lenhart Schubert. High-fidelity lexical axiom construction from verb glosses. In *Proceedings of the Fifth Joint Conference on Lexical and Computational Semantics*, pages 34–44, Berlin, Germany, August 2016. Association for Computational Linguistics.
- [10] Konstantin Weitz, Siwakorn Srisakaokul, Gene Kim, and Michael D. Ernst. A format string checker for java. In *Proceedings of the 2014 International Symposium on Software Testing and Analysis, ISSTA 2014*, pages 441–444, New York, NY, USA, 2014. ACM.
- [11] Konstantin Weitz, Gene Kim, Siwakorn Srisakaokul, and Michael D. Ernst. A type system for format strings. In *Proceedings of the 2014 International Symposium on Software Testing and Analysis, ISSTA 2014*, pages 127–137, New York, NY, USA, 2014. ACM.

Unrefereed Publications

- [12] Stephen Soderland, Natalie Hawkins, Gene Kim, and Dan S. Weld. University of Washington system for 2015 KBP cold start slot filling. In *Text Analysis Conference (TAC) KBP*, November 2015.