Xi Victoria Lin

CONTACT INFORMATION	Allen School of Computer Science & Engineering University of Washington 486 Paul G. Allen Center 185 Stevens Way Seattle, WA 98195-2350, USA	*Mobile:* +1-206-519-8086 *E-mail:* xilin@cs.washington.edu *WWW:* http://victorialin.net

RESEARCH INTERESTS

Natural language understanding, knowledge representation, machine learning.

EDUCATION

University of Washington, Seattle, WA
Ph.D. student, Computer Science and Engineering, June 2013 - *present*
- Advisor(s): Prof. Luke Zettlemoyer
- Research Interest: semantic parsing, natural language understanding

University of Pennsylvania, Philadelphia, PA
Ph.D. graduated as M.Sc., Computer and Information Science, May 2013
- Cumulative GPA: 3.86/4.0
- Advisor: Prof. Benjamin Taskar
- Research Interest: natural language processing, machine learning

University of Oxford, Kellogg College, Oxford, UK
M.Sc., Computer Science (w. Distinction), September 2011
- Advisor: Prof. Stephen Pulman
- Area of Study: computational linguistics, logic and formal semantics

The Hong Kong Polytechnic University, Kowloon, HK
B.Eng., Electronic & Information Engineering, August 2010
- Cumulative GPA: 4.0/4.0
- Advisor: Prof. Kenneth K. M. Lam

Xi'an Jiaotong University, Xi'an, China
Special Class for the Gifted Young, January 2008
- University preparatory program emphasizing math and science training for 9th-grade students selected from across mainland China

RESEARCH PROJECTS

Program Synthesis from Natural Language Using Neural Networks (2016 - *present*)
With Chenglong Wang, Kevin Vu, Deric Pang, Profs. Michael Ernst and Luke Zettlemoyer
This project sought to make programming easier by letting programmers use their own words and concepts to express an intended operation, rather than forcing them to accommodate the machine grammar. Our system, Tellina (http://tellina.rocks), automatically translates natural language instructions to a programming language. In a controlled study, programmers who used Tellina outperformed non-users on a series of programming tasks to a statistically significant degree, even when Tellina's translations were not completely correct.

Cross-lingual Distant Supervision for Relation Extraction (2014 - *2016*)
With Profs. Sameer Singh and Luke Zettlemoyer
This project proposed bilingual projection in the universal schema framework to strengthen the distant supervision signal for relation extraction in two languages, English and Chinese. We assume the same set of relations should be expressed by parallel text patterns. Conversely, patterns that express the same relations are likely to be parallel. We observed that combining the distant supervision data of the languages

alone improves predictions over both languages, and adding bilingual projection of the text patterns further improves the results.

Multi-label Learning with Posterior Regularization (2013 - 2014)
With Luheng He, Profs. Benjamin Taskar, Sameer Singh, and Luke Zettlemoyer
This work uses posterior regularization techniques to enforce soft constraints on the output of discriminative multi-label classifiers, regularizing them to prefer sparse and low-rank predictions. Avoiding strict low-rank constraints enables a learned trade-off that leads to better generalization. Experiments in both the image and text domains demonstrate the contribution of each modeling assumption and show that the approach achieve state-of-the-art performance on a number of challenging datasets.

Fine-grained Named Entity Classification in Machine Reading (2011)
With Prof. Stephen Pulman
This work proposed a bootstrapping approach that classifies named entities into entry-level categories, with a special focus on the *people* domain. Our bootstrapping extractor iteratively 1) mines "is-a" relations between a person and an entry-level category and 2) discovers new person and category mentions from text. The classifier performs competitively on manually annotated sentences.

RESEARCH
INTERNSHIPS
Microsoft Research, Redmond, WA. (Summer 2015)
Efficient Relation Extraction from Embedded Knowledge Graph and Text
With Researchers Kristina Toutanova, Wen-tau Yih, Hoifung Poon and Chris Quirk
Modeling relational paths has offered significant gains in embedding models for knowledge base (KB) completion. This project proposed the first exact dynamic programming algorithm which enables efficient incorporation of all relation paths of bounded length, while modeling both the relation types and intermediate nodes in compositional path representations. We conduct a theoretical analysis of the efficiency gain from the approach. Experiments on two datasets show that it addresses representational limitations in prior approaches and improves accuracy in KB completion.

Allen Institute for Artificial Inteliigence, Seattle, WA. (Summer 2014)
Knowledge Extraction for Elementary Physics Reading Comprehension
With Researcher Tom Kwiatkowski
We formulated the elementary school physics reading comprehension problem in a knowledge extraction and inference pipeline and focused on designing a knowledge representation that supports efficient inference. This project raised two challenging open problems: 1) Can we develop a symbolic language to describe the operation and inference required to solve physics problems? 2) Can we train machines to deduce and execute abstract inference procedures in an end-to-end set-up?

CONFERENCE
PUBLICATIONS
[1] Lin, X. V., Wang, C., Pang, D., Vu, K., Zettlemoyer, L., Ernst, M. Program Synthesis from Natural Language Using Recurrent Neural Networks. *In submission.*

[2] Toutanova, K., Lin, X. V., Yih, W., Poon, H., Quirk, C. Compositional Learning of Embeddings for Relation Paths in Knowledge Bases and Text. In *Proceedings of the 54th Annual Meeting of the Association for Computational Linguistics (ACL)*, August 7-12, 2016, Berlin, Germany.

OTHER
PUBLICATIONS
[3] Lin, X.V., Singh, S., He, L., Taskar, B., and Zettlemoyer, L. Multi-label Learning with Posterior Regularization. In *NIPS Workshop on Modern Machine Learning and Natural Language Processing*, December 08–12, 2014, Montreal, Canada.

[4] Lin, X.V. Fine-grained Named Entity Classification in Machine Reading. *M.Sc. thesis.* Oxford University. 2011.

TEACHING EXPERIENCE	**University of Pennsylvania**, Philadelphia, PA

Teaching Assistant

- CIS520: Machine Learning   Fall 2012
    - Writing exam questions; answering Piazza questions; office hours; grading

HONORS AND AWARDS	**University of Pennsylvania**

- Doctoral Fellowship, 2011–2013

The Hong Kong Polytechnic University
- Best Academic Performance Award, EIE Department, 2009–2010
- Hong Kong SAR Government Scholarship, 2009-2010
- Hong Kong Polytechnic University Post-entry Scholarship, 2008–2009
- Hong Kong & Kowloon Electrical Appliances Merchants Association Scholarship, 2008–2009
- Apple Inc. WWDC Student Scholarship, 2009

CONFERENCE SERVICES	Reviewer

- EMNLP 2015, 2016, 2017
- ACL 2017

PC Member
- Automated Knowledge Base Construction (AKBC) 2016

PROGRAMMING SKILLS	Deep Learning APIs: Tensorflow, Torch7, Theano Languages: Python, Java, Matlab, R, C++, Lua, HTML, CSS, JavaScript

REFERENCES AVAILABLE TO CONTACT	**Prof. Luke S. Zettlemoyer** (e-mail: lsz@cs.washington.edu)

- ★ *Primary research adviser*
- Associate Professor, Computer Science & Engineering, University of Washington
- ◇ 185 Stevens Way, Seattle, WA 98195-2350

Prof. Michael D. Ernst (e-mail: mernst@cs.washington.edu)
- ★ *Secondary research adviser*
- Professor, Computer Science & Engineering, University of Washington
- ◇ 185 Stevens Way, Seattle, WA 98195-2350

Prof. Sameer Singh (e-mail: sameer@uci.edu)
- ★ *Research collaborator*
- Assistant Professor, Computer Science, University of California, Irvine
- ◇ 4204 Donald Bren Hall, Irvine, CA 92697-3435

Prof. Stephen Pulman (e-mail: sgp@clg.ox.ac.uk; phone: +44-186-561-0800)
- ★ *M.Sc. thesis advisor*
- FBA Professor, Computational Linguistics, University of Oxford
- ◇ Wolfson Building, Parks Road, Oxford OX1 3QD

Prof. Kenneth Lam (e-mail: enkmlam@polyu.edu.hk; phone: +852-2766-6207)
- ★ *B.Eng. thesis advisor*
- Professor, Electronic and Information Engineering, The Hong Kong Polytechnic University
- ◇ Room DE503c, EIE Department, HKPU, Hung Hom, Kowloon, Hong Kong.