
Chen Liang

Contact Information **Phone:** +1 512-921-5166
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Research Interests My current research interest is the integration of machine learning with symbolic modules, using structure prediction and reinforcement learning, and the applications in natural language understanding, such as semantic parsing. For example, my latest project designed and implemented the first end-to-end neural network model (Neural Symbolic Machines) that achieves new state-of-the-art on semantic parsing over Freebase with weak supervision.

Education **Northwestern University**, Evanston, IL USA Sept 2013 – Present

- *Ph.D candidate*, Department of Computer Science GPA: 3.97
- Advisor: Kenneth D. Forbus
- Selected courses: Machine Learning, Probabilistic Graphical Models, Artificial Intelligence, Knowledge Representation and Reasoning, Qualitative Reasoning

Peking University, Beijing, China Sept 2009 – June 2013

- *B.S.*, School of Physics GPA: 3.50
- Selected courses: Algorithms, Compilers, Discrete Mathematics, Computer Systems: A Programmer's Perspective, Programming Language

Academic Experience **Northwestern University**, Evanston, IL USA

Research Assistant Sept 2013 – Present

- Focus on machine learning, natural language processing, knowledge representation, and cognitive modeling
- Worked on projects in semantic parsing, knowledge base completion and modeling human concept learning

Teaching Assistant March 2016 – June 2016

- Taught lectures on deep learning and designed assignments on Backpropagation and Character-RNN for graduate level course Machine Learning

Teaching Assistant Sept 2014 – Dec 2014

- Critiqued students' code and held office hours for graduate level course Artificial Intelligence Programming

Peking University, Beijing, China

Research Assistant Sept 2010 – June 2013

- Data analysis and simulations for cosmology research in C and Matlab

Industrial Experience

Google DeepMind Research Intern

June 2017 – Present

- Working on natural language understanding and reinforcement learning

Google

Research Intern

June 2016 – Oct 2016

- Designed and implemented Neural Symbolic Machine, the first end-to-end neural network model that achieved new state-of-the-art result on learning semantic parsing with weak supervision over Freebase (ACL-2017)

Google

Research Intern

June 2015 – Oct 2015

- Designed and implemented a text similarity model to jointly learn structural alignment and similarity estimation, and achieved state-of-the-art result on a paraphrase identification benchmark (IJCAI-2016)

Publications

1. **Liang, C.**, Berant, J., Le, Q., Forbus, K., and Ni, L. *Neural Symbolic Machines: Learning Semantic Parsers on Freebase with Weak Supervision*, **ACL-2017**, Vancouver, CA, 2017
2. Noraset, T., **Liang, C.**, Birnbaum, L., and Downey, D. *Definition Modeling: Learning to define word embeddings in natural language*, **AAAI-17**, San Francisco, USA, 2017
3. **Liang, C.**, Paritosh, P., Rajendran, V., and Forbus, K. *Learning Paraphrase Identification with Structural Alignment*, **IJCAI-16**, New York City, USA, 2016
4. **Liang, C.** and Forbus, K. *Learning Plausible Inferences from Semantic Web Knowledge by Combining Analogical Generalization with Structured Logistic Regression*, **AAAI-15**, Austin, Texas, USA, 2015
5. **Liang, C.** and Forbus, K. *Constructing Hierarchical Concepts via Analogical Generalization*, **CogSci-14**, Quebec city, Canada, 2014

Side Projects

Prof. Holmes: an Intelligent Course Advisor

- Managed a team of 5 developers to build a website providing course advising service with IBM Watson API

Awards

Todd M. and Ruth Warren Fellowship (2013-2018)

- A competitive 5-year fellowship for top computer science students

Peking University Scholarship (2009-2013)

Skills&Tools

TensorFlow, Python, Lisp/Scheme, Matlab/Octave, C, Linux Shell, LaTeX

