

Zhe Zeng | Curriculum Vitae

UCLA Engineering VI Room 368, 404 Westwood Plaza, Los Angeles, CA 90095-1596

EDUCATION

- **Department of Computer Science, University of California, Los Angeles (UCLA)** **Los Angeles, CA**
◦ *Candidate Ph.D. Student at StarAI Lab, Advisor: Guy Van den Broeck* *Sept. 2018–Present*
- **Department of Computer Science, Dartmouth College** **Hanover, NH**
◦ *Visiting Undergraduate Researcher, at Dartmouth Machine Learning Group* *Jul. 2017–Oct. 2017*
- **Department of Mathematics, Ohio State University** **Columbus, OH**
◦ *Exchange Student, for the fall term* *Aug. 2016–Dec. 2016*
- **Department of Mathematics, Chu Kochen Honors College, Zhejiang University** **Hangzhou, China**
◦ *Bachelor of Science in Mathematics with honors* *Sept. 2014–Jul. 2018*

RESEARCH INTERESTS

My research interests lie in Machine Learning (Statistical Relational Learning, Tractable Learning), Knowledge Representation and Reasoning (Graphical Models, Lifted Probabilistic Inference), and Artificial Intelligence in general.

PUBLICATIONS

Zhe Zeng and Guy Van den Broeck. Efficient search-based weighted model integration. In *Proceedings of the 35th Conference on Uncertainty in Artificial Intelligence (UAI)*, 2019.

Zhe Zeng, Fanqi Yan, Paolo Morettin, Antonio Vergari, and Guy Van den Broeck. Hybrid probabilistic inference with logical constraints: Tractability and message-passing. In *NeurIPS 2019 Workshop on Knowledge Representation & Reasoning Meets Machine Learning*, 2019.

Dilin Wang, **Zhe Zeng**, and Qiang Liu. Stein variational message passing for continuous graphical models. In *Proceedings of the 36th International Conference on Machine Learning (ICML)*, 2018.

RESEARCH EXPERIENCES

- **Weighted model integration algorithm and theories** **Oct. 2018–Present**
◦ *Advisor: Prof. Guy Van den Broeck, Department of Computer Science, UCLA*
 - Proposed efficient search-based weighted model integration algorithm and performed complexity analysis.
 - Carried out proof-of-concept synthetic experiments on model integration over satisfiability modulo theories (SMT) and affirmed that in some cases, our proposed algorithm showed significant improvement in efficiency compared with baseline methods
 - Currently work on more theoretical analysis of weighted model integration problems and approximate integration algorithm
- **Subset selection in probabilistic graphical models using Stein lower bound** **Oct. 2017–Jan. 2018**
◦ *Advisor: Prof. Qiang Liu, Department of Computer Science, Dartmouth College*
 - Proposed Stein lower bound for estimating Bayesian optimal risk and analyzed its finite-sample confidence bound
 - Carried out subset selection experiments on probabilistic graphical models and affirmed that in some cases, the Stein lower bound gave tight estimation and was effective in selection tasks compared with baseline methods
- **Variational inference algorithm for probabilistic graphical models** **Jul. 2017–Nov. 2017**
◦ *Advisor: Prof. Qiang Liu, Department of Computer Science, Dartmouth College*
 - Proposed the Graphical Stein variational gradient descent algorithm, a distributed inference algorithm for continuous graphical models as an extension of Stein Variational gradient descent (SVGD) by leveraging the Markov dependency structure
 - Analyzed the theoretical validity of the algorithm by studying Stein discrepancy and also analyzed convergence properties

SELECTED AWARDS

- **First-Class Scholarship for Elite Students in Basic Sciences** 2016
- **Scholarship for Outstanding Student** (top 8%) 2015, 2016
- **Scholarship for Outstanding Merit** (top 8 %) 2015, 2016
- **Excellent Student Award** (top 5 %) 2015, 2016

SKILLS

- **Programming** C, C++, Python, Matlab, L^AT_EX
- **Languages** Cantonese, Mandarin, English