YING SHEN

shenying19941216@163.com

EDUCATION

Carnegie Mellon University, School of Computer Science   Pittsburgh, PA
M.S. in Intelligent Information Systems (expected), GPA: 3.8/4.0   Sept 2017 - Present

Fudan University, School of Software   Shanghai, China
B.E. in Software Engineering, GPA: 3.68/4.0, Rank: 3/86, National Scholarship (top 1%)   Sept 2013 - July 2017

PUBLICATIONS

1. **Efficient Low-rank Multimodal Fusion with Modality-Specific Factors**
   Zhun Liu[*], **Ying Shen**[*], Varun Lakshminarasimhan, Paul Pu Liang, Amir Zadeh, and Louis-Philippe Morency. The 56th Annual Meeting of the Association for Computational Linguistics (ACL 2018), Oral (12.8% acceptance rate). ([*] equal contribution.)

2. **Dynamically Adjusting Word Representations Using Nonverbal Behaviours**
   Yansen Wang, **Ying Shen**, Zhun Liu, Paul Pu Liang, Amir Zadeh, and Louis-Philippe Morency. The Thirty-Third AAAI Conference on Artificial Intelligence (AAAI 2019).

RESEARCH EXPERIENCE

MultiComp Laboratory, Carnegie Mellon University | *Research Assistant*   Pittsburgh, PA
Advisor: Prof. Louis-Philippe Morency   Sept 2017 - Present

- **Compositional Face Representations**   Nov 2018 - Present
  – Proposed a deep generative framework for human faces by learning a representation that decomposes the structure of the human face into a set of hidden variables for different facial regions

   Unsupervised Learning of Multimodal Representations   Feb 2018 - Present
  – Proposed an unsupervised framework to learn multimodal representations that capture not only verbal syntax and semantics, but also contextual occurrence of nonverbal elements
  – Extended the training objective of the Skip-Gram model to also capture the distributions of features extracted from visual and acoustic contexts
  – Applied pre-trained multimodal embeddings to other multimodal tasks and showed improved performance

- **Dynamically Adjusting Word Representations Using Nonverbal Behaviors (AAAI-19)**   May 2018 - Sept 2018
  – Proposed a neural framework to model the contextual meaning of words by considering the nonverbal aspects of human communication as a shift of the verbal representation
  – Showed competitive performance for multimodal sentiment analysis and emotion recognition
  – Visualized shifted word representations for understanding the impact of sub-word modeling and dynamic shifts on modeling word meaning

- **Efficient Low-rank Multimodal Fusion with Modality-Specific Factors (ACL-18 Oral)**   Oct 2017 - May 2018
  – Proposed an efficient method to integrate multiple unimodal representations (e.g. verbal, visual and audio) into one compact multimodal representation
  – Reduced the computational and model complexity typically present in previous tensor-based fusion approach
  – Achieved competitive results on: multimodal sentiment analysis, speaker trait analysis, and emotion recognition

ArticuLab, Carnegie Mellon University | *Research Assistant*   Pittsburgh, PA
Advisor: Dr. Yoichi Matsuyama, Prof. Justine Cassell   July 2016 - Sept 2016
- **Automatic Generation of Word-level Prosody Markup Language**   July 2016 - Aug 2016
  – Implemented a BiLSTM-based neural network for labeling sequential data and generating word-level prosodic labels, including break, pitch, tone, and rate of speech
  – Applied a rule-based method to generate prosody based on the actual linguistic rules of human language
- **Natural Language Understanding Module of Socially Aware Robot Assistant (SARA)**   Aug 2016 - Sept 2016
  – Designed speakers' intention schemes - namely, greetings and requests - and trained language understanding model to classify the intention using the Language Understanding Intelligent Service (LUIS), and achieved classification results (0.91 F1 score)

PROJECT EXPERIENCE

- **Improving Machine Translation Quality by Cross-lingual Natural Language Inference**   Nov 2018 - Present
  – Proposed a new framework for end-to-end neural machine translation (NMT) by Cross-lingual Natural Language Inference
  – Optimized our NMT system towards generating translations that score higher in both machine translation and natural language inference tasks by using minimum risk training
- **Low-resource Neural Machine Translation**   Oct 2018
  – Implemented an NMT model for low-resource translation with Universal Lexical Representation
  – Utilized back-translation to created additional pseudo-parallel data by translating monolingual data with a trained phase-based statistical machine translation using Moses
- **Dependency Parsing with Deep Reinforcement Learning**   Feb 2018 - May 2018
  – Trained a reinforcement learning agent using the Advantage Actor Critic (A2C) algorithm to perform non-greedy decoding with transition-based dependency parser by considering the future rewards
  – Performed experiments on the English Penn Treebank (PTB) datasets and improved around 0.4% accuracy compared to the supervised neural dependency parser

TEACHING EXPERIENCE

Teaching Assistant, Carnegie Mellon University   Fall 2018
Course: 11-777, Advanced Multimodal Machine Learning | Instructor: Prof. Louis-Phillipe Morency

AWARDS AND HONORS

KLA-Tencor Excellent Student Scholarship, Fudan University (top 1%)	Oct 2016
EMC Excellent Student Scholarship, Computer Science Department, Fudan University (top 2%)	Apr 2016
National Scholarship (top 1%)	Oct 2015
iShamrock Software Competition 2015, 1st Runner-up	Mar 2015
Excellent Student in Computer Science School, Fudan University (top 1%)	Nov 2014
Fudan University Excellent Student Scholarship, First Prize (top 4%)	Oct 2014

SKILLS AND INTERESTS

Computer Languages	Java, Python, C++/C, MATLAB, SQL, HTML/CSS, JavaScript
Frameworks and Tools	PyTorch, Tensorflow, Keras, Spring, Hibernate, WebGL, OpenCV, AWS, Hadoop, HBase
Languages	Mandarin Chinese (Native), English (Fluent), Japanese (Basic Conversational Proficiency)
Interests	Painting, Swimming, and Traveling