Xiang Zhou
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EDUCATION

SEPT. 2014–PRESENT	B.S.E. in Computer Science **Shanghai Jiao Tong University**, China IEEE Honor Class, an elite program aiming to nurture scientists in EECS Overall GPA: 3.88/4.30 Major GPA Ranking: 3/70

RESEARCH EXPERIENCE

JULY 2016–PRESENT

Speech Lab, Shanghai Jiao Tong University

Joint Optimization of Policy Network and Dialog State Tracker, Supervised by Prof. Kai Yu (In progress)

- Optimized the dialogue state tracker using deep deterministic policy gradient (DDPG) online
- Designed a novel structure for tracker to dynamically extend slots and values

Rule-Guided On-line Dialogue Policy Learning, Supervised by Prof. Kai Yu

- Extended the *Companion Teaching* framework to a combination of statistical and rule-based models
- Quantified and addressed the *safety* and *efficiency* problem of dialogue systems
- Estimated the uncertainty of policy networks using dropout
- Designed a *companion strategy* to decide the timing of teacher guidance based on uncertainty
- Proposed an *agent-aware dropout Deep Q-Network* outperforming current baselines

Hybrid Intelligence Spoken Dialogue System, Supervised by Prof. Kai Yu

- Solved the *cold start* problem in dialogue systems due to insufficient off-line data
- Proposed a novel reinforcement learning framework called *Companion Teaching* to let statistical models learn from human experts using both example actions and rewards
- Implemented an LSTM-based dialogue state tracker

JULY 2017–SEPT. 2017

NLP Group, Univesity of Notre Dame
Character-level Neural Language Model, Supervised by Prof. David Chiang

- Test several hypotheses about the limitation of character-level NLM
- Proposed a new hypothesis that character-level NLMs are not trained to predict far enough into the future
- Confirmed this hypothesis by reducing character-level perplexity from 2.39 to 2.36

PUBLICATIONS

2017   Lu Chen, **Xiang Zhou**, Cheng Chang, Runzhe Yang and Kai Yu. *Rule-Guided Safe and Efficient On-line Dialogue Policy Learning.* In Proceedings of the Conference on Empirical Methods in Natural Language Processing 2017 (EMNLP 2017)

2017   Cheng Chang, Runzhe Yang, Lu Chen, **Xiang Zhou** and Kai Yu. *Affordable On-line Dialogue Policy Learning.* In Proceedings of the Conference on Empirical Methods in Natural Language Processing 2017 (EMNLP 2017)

2017   Lu Chen, Runzhe Yang, Cheng Chang, Zihao Ye, **Xiang Zhou** and Kai Yu. *On-line Dialogue Policy Learning with Companion Teaching.* In Proceedings of the 15th Conference of the European Chapter of the Association for Computational Linguistics (EACL 2017)

ACADEMIC ACTIVITIES

SEPT. 2017–Present	Co-translator of the Chinese translation of *Reinforcement Learning: An Introduction*

Selected Projects

June 2017	**Combined Baseline for Link Prediction in Knowledge Graph** Combined the idea behind 3 state-of-art algorithms (including pTransE, HolE and ProjE) of link prediction in knowledge graph and built a stronger baseline model
June 2017	**Piano Midi Generation with SeqGAN** Used SeqGAN to train a generative model of two-channel piano MIDI file. Some additional music knowledge was added to control the output of the model for better performance
Aug. 2016	**Efficient Named Entity Recognition System** Built a combination model of rule-based method and a statistical model CRF (Conditional Random Field) to recognize Chinese named entity in text
June 2016	**Simulated Pipeline CPU** Implemented a simulated CPU which supports the basic instructions of MIPS and implements the 5-stage pipeline structure using Verilog HDL
Jan. 2016	**Search Engine of Tourism Products** Built a search engine using Lucene which supports to search text and graph result with text query. All the text and graph were crawled by us from Ctrip. Extracted features in graph using SURF.
Feb. 2015	**Road Slope Estimation from Noisy Data** Helped CyberC3 Intelligent Vehicle Labs, Shanghai Jiao Tong University to process the data and implemented an improved Kalman filter algorithm to determine the real slope of the road information from the noisy data

Selected Scholarships and Awards

2015	The Mathematical Contest in Modeling 2015 Meritorious Winner
2015, 2016	Academic Excellence Scholarship Prize B (Top 10%)
2015	Xindong Scholarship (Top 10%)
2016	Eleme Scholarship (Top 10%)

Languages

TOEFL:	110 (Reading 29, Listening 29, Speaking 23, Writing 29)
GRE:	Verbal 157, Quantitative 170, Analytical Writing 3.5

Skills

Programming Languages:	Python, C++, Lua, MATLAB, LaTeX, Verilog HDL
Machine Learning Frameworks:	MXNet, DyNet, PyTorch, TensorFlow