Zipeng Xu

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Education & Selected Awards

Beijing University of Posts and Telecommunications (BUPT) 2018 - 2021 (expected)

M.S. in Intelligence Science and Technology, Supervisor: Prof. Xiaojie Wang, GPA: 89.54/100.00

- Research topics: Visual Dialogue, Vision and Language, Natural Language Generation using Reinforcement Learning
- Outstanding Postgraduate Student Award at *BUPT* (2019)

Beijing University of Posts and Telecommunications (BUPT) 2014 - 2018

B.E. in Communication Engineering, GPA: 88.38/100.00

- BUPT 2018 Excellent Bachelor Thesis Award (top 2% of 732)
- First Prize and Best Team Award at 2017 China Mobile Internet Innovation Contest (rank 3 of 215 in finals)

Experiences

WeChat-AI, Tencent Inc. 04. 2020 - present

Research Intern directed by Dr. Fandong Meng

- Focus on improving Visual Dialogue agents with Reinforcement Learning
- Have submitted one paper to CVPR 2021 as first author **[1]**
- Build intelligent agents that can understand both visual scene and language in a human-AI interactive product
- Work on one ongoing research project which aims to teach Visual Dialogue agents to conduct most efficient dialogues that can best distinguish the only corresponding image from other similar images

Center of Intelligence Science and Technology, BUPT 09. 2018 - present

Postgraduate Student Research supervised by Prof. Xiaojie Wang

- Focus on Visual Dialogue, fusion of vision and language, reasoning in Visual Question Answering (VQA)
- Collaborated with Dr. Chenfei Wu, helped improve the accuracy of VQA in Object Difference Attention with modified training method, designed a multi-modal reasonging mechnism that incorporates position information for VQA, studied matrix factorization method in Differential Networks (DN) and applied DN to Text Classification
- Researched on better modeling the interactions between vision and language in Visual Dialogue **[2]**

Lavector Technologies 06. 2018 - 09. 2018

Research Intern

- Worked on word vector representation in specific corpus as part of the smart retailing solution
- Studied on neural dialog models using conditional variational autoencoders and evaluation of dialogue diversity

Papers

[1] **Zipeng Xu**, Fandong Meng, Xiaojie Wang, Duo Zheng, Chenxu Lv and Jie Zhou, 2020. Keep Saying Something New-Jointly Enhancing Visual Dialog Agents by Enriching Explicit Visual Belief. *Submitted to CVPR 2021, under review.*

- Propose Explicit Visual Belief (E-VB) to explicitly model the visual dialogue state.
- Based on E-VB, propose a novel reward mechanism to incentivize questioning agent to constantly raise non-repetitive and visual-coherent questions, answering agent to make detailed and visual informative responses.
- Achieve state-of-the-art performance on image-guessing task, obtain improved visual dialogue agents that can generate less repetitive, more visual coherent and informative dialogues according to the experimental results on VisDial v1.0.

[2] **Zipeng Xu**, Fangxiang Feng, Xiaojie Wang, Huixing Jiang, Yushu Yang and Zhongyuan Wang, 2020. Answer-Driven Visual State Estimator for Goal-Oriented Visual Dialogue. *In Proceedings of the 28th ACM International Conference on Multimedia. (accepted as a full paper)* [code]

- Propose Answer-Driven Visual State Estimator (ADVSE) to capture the significant effects of different answers in Visual Dialogue. Define the semantics of "confirm/deny(yes/no)" dialog act and accordingly update the visual attention state. Visual difference information is conditionally considered in estimating the visual state.
- Models with ADVSE achieve state-of-the-art performances and convincing qualitative results on both Question Generation and Guess tasks on the large-scale GuessWhat?! dataset.

Projects

- Referring Expression Understanding and Generation via Visually-Grounded Cooperative Dialogue *(funded by Natural Science Foundation of China, NSFC - Grant No.61906018)* 09. 2019 - present
  - Researched on Visual Dialogue models, helped use Reinforcement Learning to improve Referring Expression Generation
- Enterprise Cooperation Project with Meituan-Dianping 09. 2019 - 05. 2020
  - Researched on multi-round dialogue modeling for intelligent customer service scenarios

Presentations

- Fusion of Vision and Language in Dialogue Tasks, *Meituan Technology Salon* 10. 2020
- Improving Visual Dialogue Agents with Deep Reinforcement Learning, *WeChat-AI Basic Technology Group* 09. 2020
- Recent Advances in Goal-Oriented Visual Dialogue, *WeChat-AI Basic Technology Group* 07. 2020
- From VQA to VD - The Interactions Between Vision and Language, *BUPT IEEE Student Brunch* 04. 2019

Scholarships

2020	National Scholarship for Postgraduate Student	*China*
2019	Samsung Scholarship for Outstanding Student	*Samsung*
2018-2020	Three times recipient of First Prize Scholarship for Postgraduate Student	*BUPT*
2018-2015	Two times recipient of First Prize Scholarship for Undergraduate Student	*BUPT*

Extra Curricular

BUPT IEEE Student Brunch 2017 - 2019
Chair, Vice Chair

- Organized international and domestic exchange activities in academy and technology for more than 10 times
- Participated in the IEEE China Student Congress 2019
- Won the IEEE Best Student Brunch Award in 2018

Global Artificial Intelligence Technology Conference 2018 05. 2018
Volunteer

- Helped convene and interview volunteers in the university
- Volunteered as a translator during the conference

Former Residence of Soong Ching Ling, the honorary president of China 2015 - 2016
Volunteer

- Introduced the life of Ms. Soong Ching Ling, furnishings and related anecdotes for visitors
- Helped hold the Centennial Commemoration of Sun Yat-sen Soong Ching Ling's marriage in 2016
- Won the Honor of Outstanding Volunteer (1 of 15 in the year of 2015)

Technology Competence

Programming Skills: Python, Shell, C & C++, MATLAB, LaTeX, HTML, Java, Lua
Deep Learning Tools: Pytorch, TensorFlow, Theano, Torch
Operating Systems: Linux, Windows

Referees

Professor Xiaojie Wang, Professor in Center of Intelligence Science and Technology, School of Artificial Intelligence, Beijing University of Posts and Telecommunications, xjwang@bupt.edu.cn.
Doctor Fandong Meng, Senior researcher and group leader at Tencent WeChat AI - Pattern Recognition Center, fandongmeng@tencent.com.