Songlin Zhai

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Negative Sampling in Visual Semantic Embedding; KBQA

Education

Northeastern University **Master**

Software Engineering (The first place in the National Post-graduate Entrance Examination)Sep., 2017 — Jan., 2020

Yanshan University **Bachelor**

Computer Science and Technology (GPA : 3.30/4.00, ranked within Top 10%) *Sept., 2013 — Jul., 2017*

Publications

1. ***VSE-ens: Visual Semantic Embeddings with Efficient Negative Sampling*** AAAI'18 **Co-first author**
   Guibing Guo, ***Songlin Zhai****, Fajie Yuan, Yuan Liu, Xingwei Wang*

3. ***VSE-fs: Fast Full-sample Visual Semantic Embedding*** IEEE Intelligent Systems ***First Author***
   Songlin Zhai*, Guibing Guo, Fajie Yuan, Yuan Liu, Xingwei Wang*

2. ***Improving Visual Semantic Embedding with Fast Negative Sampling*** ACM TKDD ***Under review***
   Songlin Zhai*, Guibing Guo, Fajie Yuan, Yuan Liu, Xingwei Wang*

4. ***CLEAR: Collectively Linking Entity and Relation for Question Answering over Knowledge Bases***
   This work was done during Songlin Zhai's internship at Tencent AI Lab. IJCAI'20 ***Under review***
   Songlin Zhai*, Jialong Han, Guibing Guo, Yuan Liu*

Projects and Work experiences

1. Intern at NLP center, Tencent AI Lab

2019 Tencent Rhino-Bird Elite Training Program **Apr., 2019 — Sept., 2019**

Enterprise mentors: Jialong Han and Shuming Shi

Focus on Knowledge Base Question Answering. Have submitted CLEAR paper to AAAI'20 (Publications #4)

- Incorporate Question Template and Relation into Entity Linking phase to further alleviate the problem of "name ambiguity". Surpass the state-of-the-art baseline by a 18.6% improvement in *EL*.
- Incorporate Entity Type and Relation Type into Relation Linking phase to improve the accuracy of *RL*. Surpass the state-of-the-art baseline by a 31.6% improvement in *RL*.
- Jointly train *EL* and *RL* sub-tasks to achieve the above Mutual Reinforcement Effects
- Our collectively linking model aims to rectify the cases that can not be alone performed correctly in EL or RL
- CLEAR surpasses the state-of-the-art baseline by a 1.7% improvement in answer accuracy

  P.S.: Reported results are based on *SimpleQuestions* benchmark, since we focus on single-relation *QA*.

2. Cooperative project with the School of Resources and Civil Engineering

Innovation research group cultivation **Technical Director**

Key Members: Wanchen Zhu, Penghai Zhang, Guibing Guo, Songlin Zhai *May, 2018 — May, 2019*

- Predict the degree of rock failure based on linear regression model.
- Predict the degree of rock failure based on convolutional neural network.
- Predict the degree of rock failure based on recurrent neural network.
- Build a cloud platform to assess the degree of rock failure for the prediction of disaster. Our well-designed model reduces MSE (Mean Square Error) to 0 on the given dataset.

3. RuanKo Network Technology Co. Ltd.

Pocket Guide System on Android **Project Leader**

Java Project *Jun., 2016 — Sept., 2017*

- Develop a Pocket Guide Software based on Android
- This application includes modules of tourist attractions, weather forecast, map navigation, system settings and help.
- Line of Code (LOC): 7000; Code defect 5%.

Honors and Awards

Apr., 2019: Elected to the 2019 Tencent Rhino-Bird Elite Training Program

Nov., 2018: National Scholarship for Postgraduate Students

Sept., 2018: The Second Prize Scholarship of Northeastern University

Sept., 2017: The First Prize Scholarship of Northeastern University

Jun., 2016: Honored as "Outstanding Individual" in the RuanKo program

Jun., 2016: The internship program at RuanKo is rated *Grade:A*

Sept., 2015: HuaRun Grants

Sept., 2013 — Jul., 2017: Many times gained The First or Second Prize Scholarship; Merit Student during undergraduate period