Kaixin Zhang

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**EDUCATION**

**AI Turing Class, EECS College, Peking University *Beijing, China*  *Bachelor of Engneering in Artificial Intelligence*  *Sept. 2018 – Present***

* **Overall GPA**: 3.67/4.00 **Major GPA**: 3.72/4.00
* **Honor**: Newbee Scholarship of Peking University *Dec. 2018*  
   School-level Scholarship of Peking University  *Oct. 2019*
* **Major courses**
  + Core Courses:   
    Machine Learning 88/100,   
    Operating System 86/100,   
    Discrete Mathematics and Structures 94/100
  + Frontier Computing Courses:   
    Natural language and Data science 100/100,   
    The Brain and Cognitive Science 91/100,   
    Study and Practice on Topics of Frontier Computing 90/100

**RESEARCH EXPERIENCE**

**Development of Commonsense-based Question Generation Models** *May. 2020-Nov. 2020, Beijing*

*Research Assistant | Supervisor: Prof. Yunfang Wu, Institute of Computational Linguistics of PKU*

* Designed a Seq-to-seq Question Generation model and developed static graph attention mechansim that extracts extern knowledge from Knowledge Graph to assist feature capture of the encoder
* Transferred an existing QG model from SQuAD (a classic NLG corpus) to RACE (the latest NLG corpus)
* Participated in another project of Commonsense-based Multitask Learning QG project, provided assistance about baseline implementation and data completion in ablation experiment, which was accepted by [ACL2020](https://www.aclweb.org/anthology/2020.acl-main.545/)

**Study of Mainstream Methods for Continual Learning** *Mar. 2020-May. 2020, Beijing*

*Member | Supervisor: Prof. Zhihong Deng, Department of Machine Intelligence of PKU*

* Participated in seminars with the research group, and delivered speech about future of replay-based Contiual Learning, especially about knowledge storage and transference
* Finished a detailed paper review covering the origin and development of three classes methods of Lifelong Learning: regularization-based, dynamic-structure-based and replay-based neural network training

**Modification of Semi and Self-supervised Text Classification Methods** *Jan. 2020-Mar. 2020, Beijing*

*Member | Supervisor: Assistant Prof. Rui Yan,* *Wangxuan Institute of Computer Technology of PKU*

* Investigated all the published semi-supervised and unsupervised Text Classification models from 2018 to 2020, and discussed the working mechanism of some self-supervised networks and possibility of optimization
* Verified the validation of one of the noisy-label adversarial TC models through model reproduction using PyTorch
* Designed an feasible method to integrate Paragraph-level Features to improve TC.

**PROJECT DEVELOPMENT**

**[Commonsense Question Generation Model using Knowledge Graph](https://github.com/Leadlegend/Commonsense-based-Question-Generation)** *July. 2020-Oct. 2020, Beijing*

*Leader | Supervisor: Prof. Yunfang Wu, Institute of Computational Linguistics of PKU*

* Reached 17.63 for BLEU-4, on standard SQuAD test set, which is distinguished among the non-pretrained methods
* Designed a static graph attention mechanism to integrate extern information from Knowledge Graph, which can be concatenated onto word embeddings as linguistic feature to assist decoder to generate more “rational” tokens
* Adopted classic mechanisms of seq-to-seq QG including Maxout Pointer Copy Mechansim and Gated Self Attention
* For the next step, to implement some other attention structures to extract further commonsense information and will pay more attention to pre-train models

**Fracture Detection Model using Faster-RCNN** *Apr. 2020-June. 2020, Beijing*

*Member | Supervisor: Prof. Liwei Wang, Center for Data Science of PKU*

* Used Generalizaed-RCNN of Detectron2 to implemented Faster-RCNN for its scalability, training Backbone Network for feature extraction, Region Proposal Network for anchor detection and ROI pooling layer for length normalization
* After investigation and comparision, we took ResNet+FPN as backbone network instead of purely ResNet, which paid comprehensive attention to features in all levels
* Adopted transfer learning on ImageNet to get better performance, specifically, fixing parameters of downside layers of the backbone, and fine-tune the parameters of remains

**SKILLS**

Pytorch, C, C++, Python, Assembly, Tensorflow