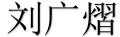# Guangyi Liu
刘广熠

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Experiences

University of Electronic Science and Technology of China, Chengdu   **9.2014-7.2018**

Bachelor of School of Automation Engineering.

Overall **GPA: 3.91/4.0, ranking 1st/188**

I-Shou University, Kaohsiung   **9.2016-1.2017**

Exchange student of Department of Mechanical and Automation Engineering.

GPA: 4.0/4.0

Shenzhen Research Institute of Big Data, Shenzhen   **8.2017-5.2018**

Visiting student

Advisor: Prof. Zhi-Quan Luo

Research: Big Data on Campus: Analyze the effect of students' behavior on GPA through WIFI data.

JD AI Research, Beijing   **9.2019-12.2019**

Internship

Advisor: Dr. Bowen Zhou and Dr. Junwei Bao

Research: Few-shot relation classification.

The Chinese University of Hong Kong, Shenzhen   **8.2018-NOW**

PhD student

Advisor: Prof. Shuguang Cui and Prof. Zhen Li

Collaborator: Prof. Zhiting Hu from UCSD, Dr. Zichao Yang from CMU, and Prof. Xiaodan Liang from SYSU,

Research: Language generation, generative models

Projects

Composable Text Operations in Latent Space with ODEs

➢ 7.2021 - 7.2022

➢ We develop a new efficient approach that performs composable control operations in the compact latent space of text.

➢ Our approach permits combining arbitrary operators applied on a text latent vector, resulting in an energy-based distribution on the low-dimensional continuous latent space.

COVID-19 CT Report Generation (Medical-VLBERT)

➢ 4.2020 - 6.2021

➢ We propose to use the Medical Visual Language BERT (**Medical-VLBERT**) model to identify the abnormality on the COVID-19 scans, and generate the medical report automatically based on the detected lesion regions.

➢ To produce more accurate medical reports and minimize the visual-and-linguistic differences, this model adopts an alternate learning strategy with two procedures, which are knowledge pre-training and transferring.

➢ We construct a COVID-19 CT Dataset, containing clean CT scans and structural medical reports.

Robust Language Generation Loss

➢ 9.2020 – 12.2021

➢ Cross entropy is too strict for generation model, requiring exact match, or the loss will explode. Then we propose a robust objective that could avoid such a problem, and it can be easily adopted in popular generation models.

➢ The computational processes of BLEU metric and cross entropy are consistent, and can be formulated as a unified CNN (Convolutional Neural Network), thus providing a novel perspective to optimize the text generation models.

Few-shot Relation Classification.

➢ 9.2019 - 12.2019

➢ Due to the fact that some relations usually keep high co-occurrence in the same context, previous few-shot relation classifiers struggle to distinguish them with few annotated instances.

- An Entity-Guided Attention (EGA) mechanism, which leverages the syntactic relations and relative positions between each word and the specified entity pair, is introduced to guide the attention to filter out information causing confusion.
- A Confusion-Aware Training (CAT) method is proposed to explicitly learn to distinguish relations by playing a pushing-away game between classifying a sentence into a true relation and its confusing relation.

Big Data on Campus: Analyze the effect of students' behavior on GPA through WIFI data.
- 8.2017 – 4.2018
- Use XGBoost to do pattern mining and analyze the effect of students' behavior on GPA through WIFI data.

National Undergraduate Electronic Design Contest (NUEDC) (全国大学生电子设计竞赛)
- 4.2016 - 8.2016
- Design an autonomous driving car along race track made of wire by using TI's LDC1314 sensor. And finish the race track as fast as possible.
- The **1st prize of Sichuan province (省一等奖)** was awarded to my team.

The 5th National University Students' Opt-Sci-Tech Competition (全国大学生光电设计竞赛)
- 2.2016 - 8.2016
- Design an autonomous four-rotor aircraft which can throw supplies on assigned place, then return to load and repeat the process.
- Navigation by *AprilTags C++ library* (2D barcodes developed for robotics applications) and deployment on micro PC (8050)
- The **National 1st prize (国家一等奖)** was awarded to my team (elect 8 teams from 180 teams from almost all the universities from China).

Publications

Wang, Y., Bao, J., **Liu, G**., Wu, Y., He, X., Zhou, B., & Zhao, T. (2020). Learning to Decouple Relations: Few-Shot Relation Classification with Entity-Guided Attention and Confusion-Aware Training. Accepted by **COLING 2020**.

Liu, G., Liao, Y., Wang, F., Zhang, B., Zhang, L., Liang, X., Zhang, S., Li, S., Li, Z., Wan, X., & Cui, S. Medical-VLBERT: Medical Visual Language BERT for COVID-19 CT Report Generation with Alternate Learning. Accepted by **IEEE TNNLS** 2021(IF=10.451)

Liu, G., Yang, Z., Tao, T., Liang, X., Li, Z., Zhou, B., Cui, S. and Hu, Z., 2021. Don't Take It Literally: An Edit-Invariant Sequence Loss for Text Generation. Accepted by **NAACL 2022 (Oral Presentation)**

Awards & Honors

- July 2016, **the 5th National University Students' Opt-Sci-Tech Competition 1st Prize**, Ministry of Education
(Elect 8 teams from 180 teams from almost all the good universities from China including Tsinghua University and so on).

- August 2016, **National Undergraduate Electronic Design Contest 1st Prize of Sichuan province**, Ministry of Education

- December 2016, **Tang Lixin Scholarship**, Mr. Tang Lixin *(唐立新奖学金 10000 RMB per year from 2016 till now)*

 (Elect 60 students in total 33,000 students including undergraduate and graduate annually)

- May 2018, **Excellent Graduate of Sichuan Province**, Ministry of Education

- September 2017, **The 3rd China College Students' "Internet +" Innovation and Entrepreneurship Competition National Silver Prize**, Ministry of Education

- April 2017, Interdisciplinary Contest in Modeling (ICM) Honorable Mention prize, COMAP

- December 2015, National Endeavor Fellowship, Ministry of Education

- November 2016, National Endeavor Fellowship, Ministry of Education

- October 2016, Goodix Enterprise Scholarship *(10000 RMB)*, Shenzhen Goodix Technology Corporation

- December 2015, the eagle plan scholarship *(8000 RMB)*, UESTC

- December 2015, Haitian scholarship, School of Automation Engineering *(6000 RMB)*, UESTC