刘书良

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24岁 | 男 | 山东省临沂市 | 中共党员

教育经历

清华大学 软件学院 硕士 2019年09月 - 2022年07月

通过最优化、深度学习和大数据系列课程学习理论基础和编程实践，参与国家工程重点实验室项目FloK培养编程能力和沟通合作技能；研究方向聚焦NLP中的关系抽取(Relation Extraction)，利用对比学习等技术完成了一项无监督关系抽取的研究。

同济大学 软件学院 学士 2015年09月 - 2019年07月

成绩排名4/162，多次获上海市奖学金、校级优秀学生一等奖，通过数据挖掘、数据结构与算法和其他专业课建立了良好的数理与编程基础，参与内存数据库优化、消费者购物行为预测和创业谷孵化创新项目积累了丰富的项目经验，保送清华软院。

研究经历

HiURE: Hierarchical Exemplar Contrastive Learning for Unsupervised Relation Extraction

- 共同一作，使用Pytorch框架个人完成全部代码实现，参与方法修改和论文撰写，投稿ACL-IJCNLP 2021。
- 提出名为HiURE的新型对比学习框架进行无监督关系抽取，分成Contextualized Relation Representation Encoder和Hierarchical Exemplar Contrastive Learning，分别负责基于实体的上下文关系特征提取和基于层次聚类的对比学习。
- 前者利用预训练的BERT模型，提取单个句子的k个上下文关系特征，用于instance-level的对比学习；
- 后者采用propagation clustering获得不同粒度的exemplar，代表一组相似句子的feature，并利用attention分组逐级更新句子的关系特征，然后将带有exemplar信息的句子进行exemplar-level对比学习，Hierarchical ExemNCE计算loss。
- 在两个公开数据集上的实验结果证明了HiURE在无监督关系提取上的有效性，以及与baseline相比更强的竞争性。

项目经历

通过手机信令数据挖掘用户的出行方式 【已申请专利】

作为项目组长，利用合作公司智慧足迹提供的手机信令数据中的出行轨迹时间等信息，经过数据清洗、转换、标注，以及特征工程等方法后，输入到决策树、SVM、XGboost、人工神经网络等机器学习模型中，预测用户的出行方式，准确率达到75%。

清华数为大数据软件栈—计算工作流全生命周期管理平台FloK 研发

大数据系统软件国家工程实验室项目，参与多个版本的研发，包括深度学习计算相关的算子，开发工作流模板、算子、数据集导入导出等功能；跟进产品落地，为中车四方所和天远科技有限公司等合作方提供技术支持；该项目已在多家企业测试使用。

实习经历

上海华为技术有限公司，LTE产品部 2018年09月 - 2018年12月

重构小区licence分发代码，提高代码运行效率；开发代码优化和无用代码清理工具，在整个部门大规模的代码量下进行清理和验证；从业务逻辑的角度出发，对licence分发结果进行检查，形成客户端工具，极大提高了定位出错资源的效率。

社工经历

清华大学软硕191党支部 书记 2019年09月 - 2021年01月

承担支部建设和党员发展等工作，班级党员覆盖比达60%，获得清华大学优秀集体和清华大学抗疫先进党支部等校级荣誉。

同济软院15级4班 班长 2015年09月 - 2019年07月

多次组织班级团建和学风建设活动，班级凝聚力强，带领班集体两年获得学院唯一的校级优秀集体和优秀集体标兵称号。

荣誉奖项

“新格尔杯”第十四届同济大学程序设计竞赛 二等奖；同济大学 SITP 创新项目，获得第二名 2017年

同济大学数学建模竞赛二等奖，全国大学生数学建模竞赛上海市一等奖，美国大学生数学建模竞赛二等奖 2017-2018年

技能

- **编程能力：** 熟悉Python及Pytorch框架，熟练使用C++/SQL/JavaScript/MATLAB/Git/Shell
- **英语水平：** CET4: 621 / CET6: 547，良好的英语听说读写能力
- **沟通交流：** 参与过数十次团队开发任务并多次担任组长，具有较强的团队合作能力及丰富的团队开发经验

Shuliang Liu

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EDUCATION

Tsinghua University, Master - School of Software Engineering, Software Engineering Sep 2019 - Jul 2022

Tongji University, Bachelor - School of Software Engineering, Software Engineering Sep 2015 - Jul 2019

RESEARCH EXPERIENCE

HiURE: Hierarchical Exemplar Contrastive Learning for Unsupervised Relation Extraction

- Co-first authors. Use Pytorch to complete all codes alone. Participate in method modification and paper writing.
- A new contrastive learning framework named HiURE is proposed for unsupervised relation extraction, which is divided into Contextualized Relation Representation Encoder and Hierarchical Exemplar Contrastive Learning.
- The former aims to obtain two relational features, using pre-trained BERT model, from each sentence based on the context information of two given entity pairs for instance-wise contrastive learning.
- The latter uses propagation clustering to obtain exemplars of different granularities, representing the features of a group of similar sentences, and uses attention to update the relational features of the sentences within a group hierarchically and then conducts exemplar-level contrastive learning for sentences with exemplar information. Hierarchical ExemNCE calculates the loss.
- Experimental results on two public datasets demonstrate the effectiveness of HiURE on unsupervised relation extraction when comparing with competitive baselines. This work is submitted to ACL-IJCNLP 2021.

PROJECT EXPERIENCE

Mining the user's travel mode through mobile phone signaling data. (Applied for patent)

Leading the project, I use the travel trajectory and time as well as other information in the mobile phone signaling data provided by the partner company Smart Footprint to put them into the machine learning models such as the decision tree, SVM, XGboost, ANN after data cleaning, conversion, annotation, and feature engineering. The accuracy of predicting the user's travel mode reaches 75%.

Computing workflow of full life cycle management platform FloK

A project in national engineering laboratory of big data software. Participated in the development of multiple release versions, and develop lots of modules including operators related to deep learning calculations,and the import and export system of workflow templates, operators, data set, etc. The project has been used in CRRC Sifang Research Institute and Tianyuan Technology Co., Ltd.

INTERNSHIP EXPERIENCE

Shanghai Huawei Technology Co., Ltd, LTE department Sep 2018 - Dec 2018

Rebuild the code of community license distribution to improve code execution efficiency. Develop tools to finish code optimization and useless code cleaning, then execute and verify it under the large-scale code volume of the entire department. The license distribution results are checked from the perspective of business logic and developed into a client tool, which greatly improves the efficiency of locating error resources.

LEADERSHIP EXPERIENCE

Secretary of branch of CPC, SSE, Tsinghua University Sep 2019 - Jan 2021

Responsible for organization construction and party member development. We have won university-level honors such as Outstanding Organization of Tsinghua University and Advanced Branch in Anti-epidemic of Tsinghua University.

Monitor of Class 4 at SSE, Tongji University Sep 2015 - Jul 2019

Organized team building and study activities for many times. The class has strong cohesion, leading the class to win the college's Outstanding Collective and Outstanding Collective Model title for two years, which is unique in our school.

HONORS & AWARDS

2nd prize of the 14th Program Design Competition of Tongji University. The second place in SITP innovation project. 2017

2nd Prize, Mathematical Contest in Modeling (MCM) of US. 1st prize of Shanghai in National MCM. 2017 - 2018

SKILLS

- **Programming:** Proficient in Python and Pytorch framework. Familiar with C++/SQL/JavaScript/MATLAB/Git/Shell.
- **English:** 621 in CET 4 and 547 in CET 6.
- **Communications:** Strong teamwork ability and rich team development experience in dozens of team work.