QiaoLing Chen

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Github：https://github.com/Chenqll 个人博客：https://chenqll-blog.readthedocs.io/en/latest/index.html
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EDUCATION

National University of Singapore Aug 2022 - Sep 2023
Enterprise Biz Analytics Master ISS Singapore

South China Agricultural University Sep 2018 - Jun 2022
Infomation management and infomation system Bachelor School of Mathematics and Information Technology Guangzhou

- GPA：91.61/100 Rank：5 / 120
- Advanced Mathematics 98, Linear Algebra 91, Probability and Mathematical Statistics 94, Data Structures 91, Intelligent Decision Making 95, Data Analysis and Visualisation 90, Big Data Management and Applications 97

WORK EXPERIENCE

NTU S-lab Sep 2022 - Present
Assistant

- **Main work content:** OSDI conference project - mainly responsible for the optimization of empty bubbles for the flow parallelism of large clusters under this project, achieving 200% optimization.
- **Technologies involved:** DeepSpeed, GPT, NCCL, CUDA, Pytorch
- **Personal Contributions**：
  - Megatron-DeepSpeed GPT pre-training performance tests on RTX 3090 single 4-card, A100 single 8-card and A100 4-card 32-card with different parameters.
  - The Megatro-Deepspeed source code and the nsys profile of the GPT under running parallelism were analysed to find the location and duration of the empty bubbles under running parallelism.
  - Wrapping small models using hooks, wrappers, and making small model training on and off by sending signals through large models. **(https://github.com/Chenqll/od_execution)**
  - Automatic insertion of small models into the training bubble during GPT training without affecting GPT training performance, enabling parallel optimization.
  - Cluster monitoring and management analysis of GPT training using DCGM.

Oneflow Feb 2022 - Sep 2022
Algorithm Engineer BeiJing

- **Main tasks:** Development and optimization of the OneFlow distributed deep learning framework operator library and deployment of common AI algorithms on the OneFlow Smart Cloud.
- **Technologies involved:** Pytorch, C++, CRNN, BERT, Deepspeed, Linux, Git, Sphinx
- **Individual contributions:**
  - OneFlow - OCR algorithm implementation and cloud deployment using CRNN, CTPN
  - OneFlow AI-writer implementation, including loss-alignment, parallel optimization, final project outperforms the original in terms of memory and throughput for single card, data parallelism, and model parallelism.
  - OneFlow BERT-Based-NER development and implementation.
  - OneFlow distributed framework operator error message optimisation and test development
  - OneFlow v 0.8.0 documentation refactoring using Sphinx to align with Pytorch API documentation.

RESEARCH EXPERIENCE

Feature Transformation for Cross-domain Few-shot Remote Sensing Scene Classification Nov 2020 - Aug 2022
https://github.com/Chenqll/FTM
leader

- **Project description:**This project aims to improve the performance of deep learning models in cross-domain small sample scenarios.

- **Technologies involved:** Pytorch, ResNet, SLIC
- **Personal Contribution:**
  - Designing FTM models and comparing their performance with classical algorithms.
  - Validate the effectiveness of the model on remote sensing scene classification tasks on cross-domain few-sample scenarios. The method is trained on different sample sizes from 3 - 50, and the results show an average **improvement of 8.1%** in recognition accuracy over model fine-tuning and fine-tuning of the BN layer.
  - Validating the applicability of the model to the land cover classification task on a cross-domain, small-sample scenario, the FTM model improves the **F1 score by 16% over** the model-trimmed, fine-tuned BN layer.
  - Design of a **"seed point-SLIC" method** that is more efficient than "winner-take-all" image segmentation classification methods.
  - Data analysis and collation, and writing of the paper

YouTube video trend predictions https://github.com/Chenqll/NUS_5002_project Sep 2022 - Nov 2022

- **Project description:** Time series analysis using Youtube statistics, sentiment analysis using Youtube comment data, dynamic combination of time series prediction and sentiment prediction to suggest future video creation directions.
- **Technologies involved:** Pytorch, Bert
- **Personal contribution :**
  - Sentiment classification of YouTube video comments using the BERT model, including text pre-processing and model fine-tuning.
  - Topic extraction of YouTube video comments using SUMMA, including text pre-processing (stopwords, word metathesis)
  - Classification of the generated comment Token using K-Means algorithm, which includes determining the number of K's using the silhouette method, generating word clouds and describing and extracting features for each class.

Research Outcome

2. Conference paper (ICPR 2022)

First author

FTM : Feature Transformation for Cross-domain Few-shot Remote Sensing Scene Classification

https://arxiv.org/abs/2203.02270

3. OCR algorithm implementation and deployment

OCR Training and Reasoning.

https://oneflow.cloud/drill/#/project/public/code?id=4f70d765e366b4e8a1d02042bdf15cb8

OCR Web-side Deployment.

https://oneflow.cloud/drill/#/project/public/code?id=2a925fe29a193fed2e453165733aa413

4. Large-scale Embedding solution: OneEmbedding

https://docs.oneflow.org/master/cookies/one_embedding.html

4. Oneflow V0.8 Documentation refactoring

https://oneflow.readthedocs.io/en/master/

MISCELLANEOUS

- **Skills:** Pytorch , C++ , CUDA , BERT , DeepSpeed , Linux , Git , Sphinx , Numpy , Pandas , Matplotlib , java , Springboot , html&css ,
- **Languages:** IELTS 6.5 GRE 324