

Zhen SUN

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EDUCATION BACKGROUND

City University of Hong Kong

2022.08-Present

School of Computer Science

Major: MSc in Computer Science

Beijing University of Posts and Telecommunications (BUPT)

2018.09-2022.07

School of Computer Science (National Pilot Software Engineering School)

Major: BSc in Computer Science and Technology **GPA:** 85.09/100

AWARDS & ENGLISH & SKILLS

Awards:

- ✧ Meritorious Winner in Interdisciplinary Contest In Modeling in 2020
- ✧ Second Prize in National College Students Mathematical Contest in Modeling, Beijing Division in 2020
- ✧ BUPT Third-class Scholarship & Excellent Student Leader in 2021
- ✧ BUPT Third-class Scholarship & Excellent Student Leader in 2020
- ✧ BUPT Third-class Scholarship & Excellent Student Leader in 2019

English Proficiency: CET-6: 532, IELTS 6.0

Computer Skills:

- ✧ Ability in AI - Machine Learning, Computer Vision, Natural Language Processing(mastered)
- ✧ Programming Languages - C/C++, Python, and Java & Database - MySQL (grasped);
- ✧ Algorithms - Sorting, search, graph theory, dynamic programming, and basic skills algorithms (proficient);
- ✧ Operation Systems - Windows, Linux, and OpenEluer & Architecture - B/S, C/S, and Lambda (familiar);
- ✧ Toolkit - Hugging Face, PyTorch, TensorFlow, Gensim, Keras, SentencePiece, (grasped).

RESEARCH EXPERIENCE

Core Member: **Financial Machine Translation** Supervisor: **Dr. Song Linqi**

2022.09-Present

- ✧ The project aims to achieve document level translation in the financial domain using domain adaptation of machine translation.
- ✧ Build up the corpus through web crawlers in financial domain and download the general datasets from WMT conference; Implement the Subword Segmentation to train tokenizer; Use the mBart and mT5 model for fine tuning.
- ✧ Researched and explored the reasons why the experimental results were lower than the vocabulary of mBart-large model . Proposed possible factors, including the selection of training corpora, setting of hyperparameters, limitations of unsupervised segmentation methods, overfitting or underfitting, and model architecture, among others.
- ✧ Based on these findings, a second stage of the case study was designed, aiming to further investigate these factors and optimize the model to improve the BLEU score.(Best BLEU in Financial corpus - 35.0)

PROJECTS

Team Leader; **Question generation Implementation**

2023.02-2023.04

- ✧ This project focuses on answered question generation in NLP, where the goal is to generate a question with a correct answer from a given text or speech input.
- ✧ Five main approaches were explored, including attention-based seq2seq models, graph neural networks, pre-trained

models (T5, BART), multi-task learning, and pointer networks.

- ✧ The study used the SQuAD and SQuAD NQG datasets and evaluated the methods using BLEU-1,2,4, METEOR, and ROUGE-L metrics.
- ✧ The best-performing models were t5-large and bart-large, while multi-task learning models performed the worst. The reasons behind these results were analyzed in the project.

Individual research: **Exploring the Complementary Strengths of ResNet18 and Vision Transformer Models: A Hybrid Model for Enhancing Image Classification** 2023.02-2023.04

- ✧ This project explores the potential of a hybrid parallel neural network model that combines the strengths of ResNet18 and Vision Transformer models to improve image classification performance.
- ✧ The proposed hybrid model fuses features extracted from both base models and was evaluated on three benchmark datasets.
- ✧ Results show significant improvements in classification accuracy on the Caltech-UCSD Birds-200-2011 dataset and Stanford Dogs datasets, while the enhancement on the Caltech-101 dataset was minimal. The findings highlight the potential benefits of integrating diverse deep learning models in a parallel architecture for advancing computer vision tasks.

Graduation Project; **Design and implementation of intelligent medicine box based on Android** 2021.12-2022.05

- ✧ The box is designed in C/S mode, with Android development on the client side, Spring Boot development on the server side, MySQL database for local database development, and OkHttp framework for communication, realising various ways of medication reminder, medication information management, supervision, and drug instruction query.
- ✧ Completed the requirements analysis, overall design, detailed design and system testing of the project, and completed the thesis.

Core Member; **The Recommendation System of Big Data Based on the Lambda Architecture** 2021.03-2021.07
(Grade: 99/100)

- ✧ Predicted which movies users may be interested in through their interest characteristics and historical behaviors;
- ✧ Completed the configuration of Java (1.8.0) (version number), Python (3.85), Scala (2.11.8), Flume (1.90), Kafka (2.13-2.6.1), Hadoop (2.10.1), HBase (2.4.7), and Redis (6.0.6) on Tencent cloud server Ubuntu 20.04 On LTS;
- ✧ Started batch calculation of scheduled tasks by Spark, read all historical data from HBase, calculated and saved features in Redis; Calculated the topK movies after conducting real-time feature stream computing and reading real-time data from Kafka; Took the Logistic Regression model in Spark MLlib as the CTR model, conducted training and predictions of the data in Redis, and provided the generated results for the server.

INTERNSHIP EXPERIENCES

Summer Intern; **Centre for Artificial Intelligence and Robotics(CAIR), Hong Kong Institute of Science & Innovation, Chinese Academy of Sciences** 2023.06-Present

- ✧ Involved in multimodal large language model projects in the field of surgery.
- ✧ Completed the development of plug-ins in speech.
- ✧ Responsible for researching the use of langchain to build local knowledge bases for fine-tuning large language models (fine-tuning on LLaMA) in the surgical domain.
- ✧ Responsible for working on task matrix, combining multimodal plugins: speech, image, text, etc.

Technical Intern (Big Data and AI); **Industrial and Commercial Bank of China, Guangxi** 2020.07-2020.09

- ✧ Took charge of statistical analysis of the daily operation of ICBC internet financial application systems;
- ✧ Researched and developed ICBC internet financial data applications in mainland China and Taiwan;
- ✧ Carried out data mining modeling and analysis of user behaviors and product function usage;
- ✧ Studied the potential factors affecting users, conducted data analysis and verification, and proposed improvement

measures.

STUDENT WORK

President; **BUPT Penbeat Rhythm Club**

2019.09-2020.07

- ✧ Established the club and acted as the first president;
- ✧ Formulated rules and regulations, divided functional departments, and recruited other team members;
- ✧ Arranged all departments' tasks and conducted daily training.