

Binwei YAO

<https://bigbinnie.github.io> | binnieyao@gmail.com |  GitHub: BigBinnie

Education

Shanghai Jiao Tong University (SJTU), Shanghai, China

Sept. 2018 – Jun. 2022

B.Eng in Software Engineering

A+ Courses: Natural Language Processing, Machine Learning, Introduction to Computer System, Internet Application Development Technology, etc.

Publications

Empowering LLM-based Machine Translation with Cultural Awareness

Binwei Yao, Ming Jiang, Diyi Yang, Junjie Hu

Preprint

D⁴: a Chinese Dialogue Dataset for Depression-Diagnosis-Oriented Chat

Binwei Yao, Chao Shi, Likai Zou, Lingfeng Dai, Lu Chen, Mengyue Wu, Zhen Wang, Kai Yu.

Accepted by EMNLP 2022 (Long Paper && Oral)

MSDWild: Multi-modal Speaker Diarization Dataset in the Wild

Tao Liu*, Shuai Fan*, Xu Xiang, Hongbo Song, Shaoxiong Lin, Jiaqi Sun, Tianyuan Han, Siyuan Chen, **Binwei Yao**, Sen Liu, Yifei Wu, Yanmin Qian and Kai Yu.

Accepted by Interspeech 2022

Research Experiences

SALT Lab, Stanford University

Stanford, CA

Research Intern

Oct. 2022 – Present

Culture-Aware Machine Translation System

Advisors: [Prof. Diyi Yang](#), [Prof. Junjie Hu](#)

- Proposed a new data curation pipeline to construct a culturally relevant parallel corpus, enriched with annotations of cultural-specific entities. Designed simple but effective prompting strategies to assist this LLM-based translation.
- Extensive experiments show that our approaches can largely help incorporate cultural knowledge into LLM-based machine translation, outperforming traditional NMT systems in translating cultural-specific sentences.

X-LANCE Lab, Shanghai Jiao Tong University

Shanghai, China

Research Intern

Dec. 2020 – Present

The Dialogue System for Depression Diagnosis

Advisors: [Prof. Mengyue Wu](#), [Prof. Lu Chen](#), [Prof. Kai Yu](#)

- Proposed the first benchmark dialogue dataset for depression diagnosis, including 1,339 simulated multi-turn conversations, which is a brand new type of dialogue - Task-Oriented Chat (task-oriented dialogue + chit-chat), with diagnosis records.
- Devised a novel three-phase (Portrait Collection + Dialogue Simulation + Professional Check) approach of the dialogue collection to collect clinical sound data which is subject to ethic risks.
- Conducted experiments by *PyTorch* and *HuggingFace* on response generation, topic prediction, dialog summary, and severity classification tasks on SOTA pre-trained natural language generation models such as BART, CPT, etc. to validate the dataset's performance in constructing a close-to-clinical and up-to-standard depression diagnosis dialogue system.
- Performed automatic and human-interactive evaluation demonstrating that a more empathy-driven and diagnostic-accurate consultation dialogue system could be achieved by training on our dataset, in comparison with rule-based bots.

MSDWild: Multi-modal Speaker Diarization Dataset in the Wild

Advisor: [Prof. Kai Yu](#)

- Released the first benchmark dataset for multi-modal speaker diarization in real-world environments, which

covers rich real-world scenarios and languages.

- Assisted multi-modal video collecting and filtering from the Internet, and conducting baseline experiments on the dataset using audio-only, visual-only, and audio-visual speaker diarization.

Internship

AISpeech Information Technology Co., Ltd. Suzhou, China

Jul 2021 – Sept 2021

Summer Intern, Dialogue and Multimodal Group

- Constructed the ruled-based depression-screening agent Android App and WeChat miniprogram to collect users' depressive symptoms and provide a diagnostic report.
- Implemented the language generation model based on the state machine and the language understanding model based on similarity calculation and regular matching.
- Extracted core depressive symptoms into semantic slots and stored collected symptoms in the dialogue state to control the dialogue flow in a user-specific way.
- Converted the WeChat miniprogram to the first mental health support platform - Jiao Wo Xin in SJTU, which is still serving students on campus.

Side Projects

🔗 **MobileNet**: **MobileNetV2** inference optimization implemented by *Cuda*.

- Optimized the convolution function by assign each pixel's convolution computing task to one thread, and reduced memory malloc and memcpy by sharing memory between input and output and completing the data movement before the inference.
- The inference time of one image by our model reaches 7.7ms.

🔗 **Chatbot**: A chatbot implemented by *PyTorch* with a hierarchy model with RNN as the utterance encoder, the Transformer encoder layer as the context encoder, and attention plus RNN as the decoder.

🔗 **NaiveGdoc**: A shared document collaboration platform based on the distributed file system with the frontend by *React*, the backend by *Spring Boot*, and the distributed file system by *Go*.

🔗 **Amoy Interst**: An interest-based social website which has the frontend by *React*, the backend by *Spring Boot* and a automatic CI-CD environment based on *Jenkins* and *Docker*.

🔗 **KV-Store**: A key-value storage system based on log-structured merge-tree as persistent storage and skiplist as memory cache by *C++*.

Extracurricular Experiences

The RobMaster Robot Club of SJTU

Dec 2018 – Sept 2019

Participated in the national competition of National Robotics Competition - RoboMaster Season 2019 to assist vision algorithm coding and the team won the second place.

The Youth Volunteer Service Team of SJTU

Dec 2018 – Sept 2019

Planned, organized and participated in volunteer activities such as Guidance in Shanghai Fifth People's Hospital, 2018 Shanghai International Marathon, 2019 Shanghai Odyssey of the Mind, etc.

Awards

Intelligent Foundation - Industry-Education Integration Collaborative Education Scholarship,

for students who have an excellent performance in AI-related courses.

Nov 2021

University Scholarship for the 2020-2021 Academic Year (Top 10%)

Nov 2021

University Scholarship for the 2019-2020 Academic Year (Top 10%)

Nov 2020

Meritorious Winner of the 2020 Mathematical Contest In Modeling (Top 13%)

Apr 2020

Technical Skills

Programming Languages: Proficient in *Python*, *C++*, *Java*, *Javascript*; Capable of *Cuda*, *Go* and *Shell*.

Tools: Proficient in *PyTorch*, *Spring*, *Flask*, *React* and *Vue*; Familiar with *Linux* and *git*.