

Bo LIU

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PROFILE

I am a first-year M.Phil. student. My research mainly focuses on:

- Multi-modal Learning (Vision-and Language): visual question answering, image caption generation, and image-text retrieval
- Medical Image Analysis

EDUCATION

The Hong Kong Polytechnic University
Master of Philosophy, Computer Science

Hong Kong
Sep 2020 - Expected 2022

Sichuan University
Bachelor of Engineering, Software Engineering

Chengdu, China
Sep 2015 - Jun 2019

- GPA: 3.7/4.0
- Rank: 8/273
- Innovation Class Member (20 Members)

RESEARCH EXPERIENCE

M.Phil. Student

Sep 2020 – Present

The Hong Kong Polytechnic University, Advisor: [Xiao-Ming Wu](#)

- Designed effectively self-supervised and knowledge distillation methods to address two critical issues in medical visual question answering (Med-VQA): the lack of training images and massive diversity of images in terms of different modalities and organs.
- Introduced a new dataset for Med-VQA by developing a Python labeling system. ([Details](#) about my work on Med-VQA.)

Research Assistant

Jan 2020 – Sep 2020

The Hong Kong Polytechnic University, Advisor: [Xiao-Ming Wu](#)

- Designed a new algorithm to enhance the reasoning ability of models for Med-VQA.

Research Assistant

Oct 2018 – Dec 2019

Sichuan University, Advisor: [Yi Zhang](#)

- Proposed a model to predict dose distribution for radiotherapy planning.
- Designed models to automatically segment organs at risk and clinical target volume.
- Developed a C++ program to automatically show the segmentation of breast pathology.
- Researched crop disease classification and abnormal image detection, and developed an Android app and a WeChat app to practically apply the algorithm.

PUBLICATIONS

1. **Bo Liu**, Li-Ming Zhan, and Xiao-Ming Wu. “Contrastive Pre-training and Representation Distillation for Medical Visual Question Answering Based on Radiology Images.” June 2021

- In Proceedings of International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*
2. Li-Ming Zhan, Hao-Wen Liang*, **Bo Liu***, Lu Fan, Xiao-Ming Wu, and Albert Y.S. Lam. “Out-of-Scope Intent Detection with Self-Supervision and Discriminative Training.” (*Equal Contribution)
In Proceedings of Annual Meeting of the Association for Computational Linguistics (ACL Long Paper, Oral) May 2021
 3. **Bo Liu**, Li-Ming Zhan, Li Xu, Lin Ma, Yan Yang, Xiao-Ming Wu. “SLAKE: A Semantically-Labeled Knowledge-Enhanced Dataset for Medical Visual Question Answering.” Jan 2021
In Proceedings of IEEE International Symposium on Biomedical Imaging (ISBI, Oral)
 4. Li-Ming Zhan*, **Bo Liu***, Lu Fan, Jia-Xin Chen, and Xiao-Ming Wu. “Medical Visual Question Answering via Conditional Reasoning.” (*Equal Contribution)
In Proceedings of ACM International Conference on Multimedia (ACM MM) Oct 2020
 5. **Bo Liu**, Li-Ming Zhan, and Xiao-Ming Wu. “Medical Visual Question Answering via Contrastive Learning and Conditional Reasoning.” July 2021
Under review in IEEE Transaction on Medical Imaging (TMI)
 6. Lu Fan, Qi-Mai Li, **Bo Liu**, and Xiao-Ming Wu. “Improving Personalized Product Search with Text Enrichment and Graph Convolution.” June 2021
Under review in International Conference on Data Mining (ICDM)

HONORS & AWARDS

TAL Outstanding Graduates Scholarship (25 out of 8000+)	2019
Outstanding Graduates Award, Sichuan Province	2019
Microsoft Imagine Cup Champion Award, China (1 out of 1000+)	2018
National Scholarship	2018
Sichuan University Scholarship	2016-2017
Admission to Innovation Class, Sichuan University	2015

RESEARCH GRANTS

ADHD Intelligent Diagnosis and Treatment System	Sep 2018 – Sep 2019
<ul style="list-style-type: none"> ● Principal Investigator: Bo Liu, Yue Wu ● Description: Calculate brain concentration by classifying brain signals via deep neural networks, and then diagnose and treat ADHD. ● CERNET Student Project, ¥100,000 	

SKILLS

Programming: Python, Java, C/C++, JavaScript