Qian Yang

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EDUCATION

Mila - Quebec AI Institute & Université de Montréal 2023.09 – Present
Ph.D. in Computer Science

- Research topics: Multi-modal Learning, Explainable deep learning
- Supervisor: Prof. Aishwarya Agrawal

Harbin Institute of Technology, Shenzhen 2020.09 – 2023.03
MSc in Computer Science and Technology

- Research topics: Multi-modal Learning, Explainable Question Answering
- Supervisor: Prof. Baotian Hu
- Thesis: Fine-grained Alignment for Explainable Multi-modal Inference

University of Electronic Science and Technology of China 2016.09 – 2020.06
BEng in Computer Science and Technology

- CGPA: 3.73/4.0 (top 10%)
- Thesis: Event Extraction based Text Summarization

PUBLICATIONS

- **Qian Yang**, Weixiang Yan, Aishwarya Agrawal. Decompose and Compare Consistency: Measuring VLMs' Answer Reliability via Task-Decomposition Consistency Comparison. In *Proceedings of the 2024 Conference on Empirical Methods in Natural Language Processing*, (EMNLP) 2024.
- Le Zhang, Yihong Wu, **Qian Yang**, Jianyun Nie. MuGI: Enhancing Information Retrieval through Multi-Text Generation Intergration with Large Language Models. *Findings of the Association for Computational Linguistics: EMNLP*, 2024.
- **Qian Yang**, Qian Chen, Wen Wang, Baotian Hu, Min Zhang. Enhancing Multi-modal and Multi-hop Question Answering via Structured Knowledge and Unified Retrieval-Generation. In *Proceedings of the 31st ACM International Conference on Multimedia*, pages 5223-5234, (ACM MM) 2023.
- **Qian Yang**, Yunxin Li, ..., Min Zhang. Chunk-aware Alignment and Lexical Constraint for Visual Entailment with Natural Language Explanations. In *Proceedings of the 30th ACM International Conference on Multimedia*, pages 3587-3597, (ACM MM) 2022.
- Yunxin Li, **Qian Yang**, Qingcai Chen, ..., Lin Ma. Fast and Robust Online Handwritten Chinese Character Recognition with Deep Spatial & Contextual Information Fusion Network. *IEEE Transactions on Multimedia*, vol. 25, pp. 2140-2152, 2022.
- Baotian Hu, **Qian Yang**, Yunxin Li, Qingcai Chen. Method, Device, Terminal and Storage Medium for Stroke-level Sequential Handwritten Characters Recognition. *Chinese Invention Patent*, CN114612911A, 2022.

Preprints

- Yuchen Tian, Weixiang Yan, **Qian Yang**, ..., Dawn Song. CodeHalu: Investigating Code Hallucinations in LLMs via Execution-based Verification. (Under Review)

ACADEMIC EXPERIENCES

Ph.D student at Mila - Quebec AI Institute, Canada *Advisor: Prof. Aishwarya Agrawal*

VLMs Reliability Measurement via Decomposition-based Consistency *2023.12 – 2024.06*

- Developed a task-agnostic approach to evaluate VLMs by comparing direct and decomposed sub-answer consistencies, effectively mitigating overconfidence and self-confirmation bias. Discovered that weaker VLMs benefit from external support, while stronger models exhibit less confirmation bias; the paper is published in *EMNLP 2024*.

Research Intern at Alibaba DAMO Academy, China *Advisor: Dr. Wen Wang, Qian Chen*

Enhancing Multi-modal Multi-hop QA with Structured Knowledge *2022.05 – 2022.10*

- Designed an entity-centered fusion model to align cross-modal information using structured knowledge for facilitating connections between different modalities, along with a unified retrieval-generation method to integrate intermediate retrieval results for answer generation; the paper is published in *ACM Multimedia 2023*.

Research Assistant at HIT, Shenzhen, China *Advisor: Prof. Baotian Hu*

Chunk-aware Alignment and Lexical Constraint for Explainable VQA *2021.08 – 2022.04*

- Developed a cross-modal fusion model to build semantic alignment between text chunks and visual content, addressing semantic ambiguity in multi-modal inference, and created constrained generation methods to improve explanation faithfulness by incorporating keywords; the paper is published in *ACM Multimedia 2022*.

Spatial-Contextual Information Fusion for Handwritten Characters Recognition *2020.12 – 2021.07*

- Designed a model to fuse stroke features with contextual information for online handwritten Chinese character recognition, developing training methods to simulate typical usage scenarios, enhancing robustness and recognition of incomplete characters; the paper is published in *Transactions on Multimedia 2022* and a *Chinese Invention Patent* is issued.

AWARDS AND SCHOLARSHIPS

The Second Prize Scholarship, HIT, Shenzhen (7,000 RMB)	2021 – 2022
National Encouragement Scholarship (Top 10%, 5,000 RMB)	2019
The First Prize Scholarship, UESTC (Top 20%, 1,000 RMB)	2016 – 2020

PROFESSIONAL ACTIVITIES

CONFERENCE REVIEWER

- Reviewer of CVPR 2024, ECCV 2024, AAAI 2024, ACM Multimedia 2023, 2024, COLING 2022

TEACHING ROLES

- IFT 6135 - Representation Learning (Autumn 2024), University on Montreal
- Mathematical Logic (Spring 2021), Harbin Institute of Technology, Shenzhen
- Algorithms (Autumn 2020), Harbin Institute of Technology, Shenzhen

TECHNICAL SKILLS

- Programming Languages: Python, C/C++, MATLAB, SQL
- Deep Learning Frameworks: PyTorch, TensorFlow
- Natural Languages: Mandarin (native), English (TOEFL: 99/120, R:26, L:25, S:22, W:26)