

# YIFU QIU

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## RESEARCH SUMMARY

Final-year PhD researcher at the University of Edinburgh/Cambridge (via the European Lab for Learning and Intelligent Systems (ELLIS) Network), **Apple AIML PhD Scholars** in 2023. My work focuses on the **latent world model** in large foundation models (e.g., LLMs and VLMs), investigating their emergent ability in world modelling with the minimum supervision, multimodal grounding to the physical reality, and next-generation omnimodal architectures. I have also developed the algorithms and evaluation frameworks to detect and mitigate hallucinations for these models. I have multiple first-author publications at **ICLR**, **NeurIPS**, **ACL**, **EMNLP**, and **NAACL**, with industrial experiences and collaborations spanning **Google DeepMind**, **Meta FAIR**, **Apple AIML**, **NVIDIA Research**, and **Baidu NLP**.

## EDUCATION

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| <b>University of Edinburgh &amp; University of Cambridge</b><br><i>PhD in Natural Language Processing (ELLIS Program)</i>   | Oct 2022 – Jun 2026 (Expected)<br>United Kingdom |
| – <b>Topic:</b> Latent World Modelling in Foundation Models (Advisors: Shay Cohen, Anna Korhonen, Edoardo Ponti).<br>– Fully funded by <b>Apple AIML Fellowship</b> and Informatics Global PhD Scholarship.<br>– Selected for the ELLIS PhD program (< 5% acceptance rate). |  |
| <b>University of Edinburgh</b><br><i>MSc in Cognitive Science (NLP Specialism) – Distinction</i>  | Sep 2020 – Aug 2021<br>United Kingdom            |
| <b>BNU-HKBU United International College</b><br><i>BSc in Computer Science – 1st Class Honours</i>  | Sep 2016 – Aug 2020<br>China                     |

## RESEARCH EXPERIENCE

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|--|---|
| <b>Research Scientist Intern</b><br><i>Google DeepMind</i>   | March 2026 – Aug 2026<br>London, United Kingdom |
| Project: <b>Reward Modelling for World Model.</b>   Host: Dr. Nelly Papalampidi  |   |
| <b>Research Scientist Intern</b><br><i>Meta FAIR (Fundamental AI Research)</i>   | June 2025 – Sep 2025<br>Paris, France           |
| Project: <b>Omnimodal Foundation Models (Large Concept Model)</b>   Host: Dr. Holger Schwenk   |   |
| – Developed vSONAR, a vision-language embedding space supporting 200+ text and 37 speech languages.<br>– Introduced vLCM, a scalable post-training pipeline for the 7B Large Concept Model (LCM), utilizing <b>1M instruction tuning</b> samples and 200K interleaved multimodal Chain-of-Thought data.<br>– Achieved SOTA performance on multilingual captioning and QA, outperforming existing baselines in <b>61 out of 62 languages</b> .<br>– Paper: <i>Unified Vision-Language Modeling via Concept Space Alignment</i> (ICLR 2026).     |   |
| <b>Research Scientist Intern</b><br><i>Apple AIML</i>  | June 2024 – Sep 2024<br>Seattle, WA             |
| Project: <b>Long-Context Reasoning &amp; Inference Optimization</b>   Hosts: Dr. Benjamin Han, Dr. Yizhe Zhang   |   |
| – Proposed <b>ICR<sup>2</sup></b> , a benchmark for evaluating In-Context Retrieval and Reasoning in realistic scenarios.<br>– Engineered <b>Retrieval-Attention-Probing</b> , an inference-time alignment technique using attention heads to de-noise long contexts during decoding.<br>– Demonstrated +17% Exact Match gain on LOFT and +13% on ICR <sup>2</sup> using Mistral-7B, outperforming GPT-4-Turbo on specific tasks.<br>– Paper: <i>Eliciting In-context Retrieval and Reasoning for Long-Context Language Models</i> (ACL 2025). |   |
| <b>Research Scientist Intern</b><br><i>Apple AIML</i>  | June 2023 – Sep 2023<br>Seattle, WA             |
| Project: <b>Trustworthy Generation &amp; Hallucination Mitigation</b>   Host: Dr. Benjamin Han   |   |
| – Developed <b>TWEAK</b> , a decoding-only hypothesis verification method to reduce hallucinations in knowledge-to-text generation without model retraining.   |   |

- Created FATE (Fact-Aligned Textual Entailment), a dataset for training task-specific verifiers.
- Improved faithfulness metrics (FactKB) by **7.17 points** in out-of-distribution settings with negligible latency cost.
- Paper: *Think While You Write: Hypothesis Verification Promotes Faithful Knowledge-to-text Generation* (NAACL 2024).

## Research Scientist Intern

Baidu, Inc. (NLP Department)

Nov 2021 – Aug 2022

Beijing, China

**Project: Dense Retrieval at Scale | Hosts: Dr. Hongyu Li, Dr. Jing Liu**

- Constructed DuReader-Retrieval, the largest Chinese passage retrieval benchmark derived from real-world search engine logs.
- Implemented diversity-enhanced dense retrieval training strategies using Natural Language Inference supervision.
- Paper: *DuReader-Retrieval: A Large-scale Chinese Benchmark...* (EMNLP 2022).

## PUBLICATION LIST

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### **Self-Improving World Modelling with Latent Actions** (Collaboration with Nvidia Research)

Yifu Qiu, Zheng Zhao, Waylon Li, Yftah Ziser, Anna Korhonen, Shay Cohen, Edoardo Ponti  
*Under Review, ICML 2026*

### **Unified Vision-Language Modeling via Concept Space Alignment**

Yifu Qiu, Paul-Ambroise Duquenne, Holger Schwenk  
*ICLR 2026*

### **Bootstrapping Action-Grounded Visual Dynamics in Unified Vision-Language Models** (Collaboration with Nvidia Research)

Yifu Qiu, Yftah Ziser, Anna Korhonen, Shay Cohen, Edoardo Ponti  
*Under Review, ACL 2026*

### **Eliciting In-context Retrieval and Reasoning for Long-Context Language Models**

Yifu Qiu, Varun Embar, Shay Cohen, Yizhe Zhang, Navdeep Jaitly, Benjamin Han  
*ACL 2025*

### **Spectral Editing of Activations for Large Language Model Alignment**

Yifu Qiu, Zheng Zhao, Anna Korhonen, Edoardo Ponti, Shay Cohen  
*NeurIPS 2024*

### **Are Large Language Models Temporally Grounded?**

Yifu Qiu, Zheng Zhao, Anna Korhonen, Edoardo Ponti, Shay Cohen  
*NAACL 2024*

### **Think While You Write: Hypothesis Verification Promotes Faithful Knowledge-to-text Generation**

Yifu Qiu, Varun Embar, Shay Cohen, Benjamin Han  
*NAACL 2024*

### **Detecting and Mitigating Hallucinations in Multilingual Summarisation**

Yifu Qiu, Anna Korhonen, Edoardo Ponti, Shay Cohen  
*EMNLP 2023*

### **Abstractive Summarization Guided by Latent Hierarchical Document Structure**

Yifu Qiu, Shay Cohen  
*EMNLP 2022*

### **DuReader-Retrieval: A Large-scale Chinese Benchmark for Dense Information Retrieval from Real-World Applications**

Yifu Qiu, Hongyu Li, Yingqi Qu, Ying Chen, Qiaoqiao She, Jing Liu, Hua Wu, Haifeng Wang  
*EMNLP 2022*

## COLLABORATION PUBLICATION LIST

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**Lost in Space? Vision-Language Models Struggle with Relative Camera Pose Estimation** (Collaboration with Nvidia Research)

Ken Deng, Yifu Qiu, Yoni Kasten, Shay Cohen, Yftah Ziser

*Under Review, ACL 2026*

**Iterative Multilingual Spectral Attribute Erasure**

Shun Shao, Zheng Zhao, Yifu Qiu, Yftah Ziser, Shay Cohen

*EMNLP 2025*

**What Is That Talk About? A Video-to-Text Summarization Dataset for Scientific Presentations**

Dongqi Liu, Chenxi Whitehouse, Xi Yu, Louis Mahon, Rohit Saxena, Zheng Zhao, Yifu Qiu, Mirella Lapata, Vera Demberg

*ACL 2025*

**Multiple Instance Learning with Coarse-to-Fine Self-Distillation**

Shuyang Wu, Yifu Qiu, Ines Nearchou, Sandrine Prost, Jonathan Fallowfield, Hakan Bilen, Timothy Kendall

*Under Review by TMI*

**EEE-QA: Exploring Effective and Efficient Question-Answer Representations**

Zhanghao Hu, Yijun Yang, Junjie Xu, Yifu Qiu, Pinzhen Chen

*LREC-COLING 2024*

## TECHNICAL SKILLS

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**Core Research Area:** LLM/VLM Post-Training (SFT, RLHF), Multimodality, Reasoning, AI Safety (truthfulness and fairness)

**Deep Learning:** PyTorch, HuggingFace Transformers, Diffusers

**Scaling and Infrastructure:** DeepSpeed, FSDP, Slurm, Distributed Data Parallel (DDP)

**Languages:** Python, C++, SQL, Bash

## SELECTED AWARDS & HONORS

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**Apple AIML PhD Fellowship** (2023) – Awarded to top PhD students in AI worldwide.

**ELLIS PhD Program Member** (2022) – Selected for excellence in European AI research.

**Informatics Global PhD Scholarship**, University of Edinburgh (2022).

**Lord Frederick Cavendish Award**, University of Cambridge (2022).

**Top 1% Scholarship**, BNU-HKBU UIC (2019, 2020).

## TEACHING

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Advanced Topics in Natural Language Processing, University of Edinburgh, Teaching Assistant, 2025

Accelerated Natural Language Processing, University of Edinburgh, Teaching Assistant, 2023

Natural Language Understanding, Generation and Machine Translation, University of Edinburgh, Teaching Assistant, 2024

Machine Learning Practical (Deep Learning), University of Edinburgh, Tutor, 2023,2024

## ACTIVITIES

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Invited Speaker, **Citadel PhD Summit**, United Kingdom, 2025.

Invited Speaker, **Apple AIML**, United States, 2024.

Invited Speaker, **Shanghai AI Lab**, China, 2023.

Member, **Oxford Machine Learning Summer School**, 2022.

Member, **Cornell, Maryland, and Max Planck Pre-Doctoral Research School (CMMRS)**, 2021.

## ACADEMIC SERVICE

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ICML 2026, Reviewer

NeurIPS 2024, 2025, Reviewer

AISTATS 2025, 2026, Reviewer

ACL 2025, 2026, Reviewer

EMNLP 2025, 2025, Reviewer

NAACL 2024, Reviewer

Workshop on the Scaling Behavior of Large Language Models@EACL 2024, Committee Member

Language Resources and Evaluation, Reviewer