JINGBIAO MEI

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Education

University of Cambridge   *Oct 2022 – Jun 2026*
Ph.D. at Machine Intelligence Laboratory
Supervised by Bill Byrne, research interests including Vision-Language models, Information retrieval, reasoning, AI safety and hate speech detection.

University of Cambridge   *Oct 2018 – Jun 2022*
M.Eng & BA Information and Computer Engineering Grade: top 30%
Courses: Statistical signal processing, Statistical machine learning, Deep learning for Sequenced Data, Computer vision, Optimizations, Computational neuroscience, Computer systems, Machine Learning, Information Theory and Coding, Signal and systems, Medical Imaging & 3D Computer Graphics, Business modules

Experience

Artificial Intelligence Research Intern *Huawei Cambridge Research Centre*   *July 2022 – Jan 2023*
- Researched and developed on-device efficient streaming automatic speech recognition (ASR) system
- Applied compression techniques, like pruning or low rank adaptation to reduce the model parameters
- Proposed and led research on a novel non-attention-based transformer architecture, achieving a 50% reduction in model size and computation along with a 60% decrease in end-to-end latency; secured a patent (EP4404187A1).

Deep Learning Research Intern *University of Cambridge Department of Engineering*   *June 2021 – Sept 2021*
- Developed multimodal hateful speech detection systems leveraging pretrained visual-language models.
- Designed and implemented ensemble learning techniques to achieve state-of-the-art performance in hateful speech detection, delivering high-performing prototypes.

Deep Learning Research Intern *Shanghai Jiao Tong University*   *Sept 2020 – Dec 2020*
- Researched fault-tolerant neural network architectures addressing resistance variation and bit-flip in ReRAM devices.
- Enhanced robustness through innovative approaches, including error-correction coding, Bayesian methods, and neural architecture search.
- Achieved over 30% improvement in robustness for image classification and object detection tasks, with results published in DAC 2021 and secured patent (CN113570056A).

Web Programmer *Jieqi Edge Computing*   *July 2019 – Sept 2019*
- Developed websites using Jekyll to enhance efficiency and integrate features such as news updates, downloads, login functionality, comments, and discussion forums.
- Diagnosed and tested faulty PCBs, devising effective solutions to repair and restore functionality.
- Evaluated initial container designs through 3D printing, creating and editing tutorial videos to support user adoption.

Publication

- BayesFT: Bayesian Optimization for Fault Tolerant Neural Network Architecture. 2021 58th ACM/IEEE Design Automation Conference
- Fine-grained Late-interaction Multi-modal Retrieval for Retrieval Augmented Visual Question Answering. NeurIPS2023
- Improving Hateful Meme Detection through Retrieval-Guided Contrastive Learning. ACL2024 Main
- PreFLMR: Scaling Up Fine-Grained Late-Interaction Multi-modal Retrievers. ACL2024 Main
- Control-DAG: Constrained Decoding for Non-Autoregressive Directed Acyclic T5 using Weighted Finite State Automata. NAACL 2024 Main
- On Extending Direct Preference Optimization to Accommodate Ties.

Teaching

Supervision
- Co-supervision *MPhil in Machine Learning and Machine Intelligence* (MLMI) student projects (2022-2024)
- *Medical Imaging & 3D Computer Graphics 3G4* paper (2022-2024)
- *Machine Learning 3F8* paper (2024)

Courses
- Designed, demonstrated, supervised, and assessed coursework and projects for *MLMI 8 on Machine Translation and Visual Question Answering* (2022-2024)

Additional Skills

- Deep Learning Framework (PyTorch, TensorFlow, Keras, JAX)
- Programming: Python, Visual Basic, C ++, JS
- HTML, CSS, Ruby, Markdown, Latex, Microsoft Office, CAD Software (Solidworks)
- Photo and Video shotting and post-processing with Adobe Lightroom, Premiere, Photoshop, After Effects