Tingyu Qu

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EDUCATION

KU Leuven   Leuven, Belgium

Ph.D. in Computer Science   *Sept.2020 - Mar.2025*

- Advisor: Prof. Marie-Francine Moens & Prof. Tinne Tuytelaars
- Thesis: Efficient Methods for Alignment and Generation in Vision and Language

Master of Artificial Intelligence   *Sept.2019 - Sept.2020*

- Thesis: Autoencoder with Multi-directional Ensemble of Regression and Classification Trees (MERCS)

Master of Statistics   *Sept.2017 - Jun.2019*

- Thesis: Mining Health Records Using Machine Learning Methods

Hebei University   Baoding, China

Bachelor of Mathematics and Applied Mathematics   *Sept.2013 - Jun.2017*

- *Academic scholarship*: Academic year 2014-2015, 2015-2016
- *Merit Student*: (Top 5% students in Department of Mathematics), Academic year 2015-2016
- Thesis: Application of Concept Lattice in Data Mining

WORK EXPERIENCE

KU Leuven   Leuven, Belgium

Postdoctoral Research Associate   *Mar.2025 - present*

- Advisor: Prof. Tinne Tuytelaars
- Research Interests: Vision-Language, Multimodal Large Language Models, Efficient AI, Generative Models

RESEARCH INTEREST

Vision-Language models are key to artificial general intelligence. My work includes building vision-language models for context-rich multimodal inputs (*NAACL2024*, *WACV2023*), designing efficient learning method for vision-language models (*ECCV2024*) and building multimodal large language models (MLLMs) (*Preprint2024*).

MLLMs have revolutionized our daily life. I worked on adapting image LLM for video understanding tasks, providing alternatives for building video LLMs (*Preprint2024*). Currently, I'm also exploring enhancing MLLMs' capabilities via feature routing.

Efficient AI is crucial to address challenges in limited computational resources. I introduced routing functions to vision-language Parameter-Efficient Fine-Tuning (*ECCV2024*), improved the sampling process of generative models (*ICLR2024*), and explored training-free video LLMs (*Preprint2024*).

Generative Models unveil how machines perceive, reason, and create content. I worked on advancing the sampling algorithm for diffusion models through shifted time steps (*ICLR2024*), and am currently exploring methods to keep character consistency in visual storytelling.

SELECTED PUBLICATIONS

- **Tingyu Qu**, Mingxiao Li, Tinne Tuytelaars, & Marie-Francine Moens. TS-LLaVA: Constructing Visual Tokens through Thumbnail-and-Sampling for Training-Free Video Large Language Models. *Preprint, Under Review. 2024* [Paper] [Code] [ModelScope Community]

- **Tingyu Qu**, Tinne Tuytelaars, & Marie-Francine Moens. Introducing Routing Functions to Vision-Language Parameter-Efficient Fine-Tuning with Low-Rank Bottlenecks. *In Proceedings of the 18th European Conference on Computer Vision (ECCV 2024).* [Paper][Code]

- Mingxiao Li*, **Tingyu Qu***, Ruicong Yao, Wei Sun, & Marie-Francine Moens. Alleviating Exposure Bias in Diffusion Models through Sampling with Shifted Time Steps. *In Proceedings of the Twelfth International Conference on Learning Representations (ICLR 2024).* [Paper] [Code (DDPM ver.)][Code (ADM ver.)]

- **Tingyu Qu**, Tinne Tuytelaars, & Marie-Francine Moens. Visually-Aware Context Modeling for News Image Captioning. *In Proceedings of the 2024 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies. (NAACL 2024).* [Paper] [Code]

- **Tingyu Qu**, Tinne Tuytelaars, & Marie-Francine Moens. Weakly Supervised Face Naming With Symmetry-Enhanced Contrastive Loss. *In Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV 2023).* [Paper] [Code]

- Mingxiao Li, **Tingyu Qu**, Tinne Tuytelaars, & Marie-Francine Moens. Towards More Accurate Personalized Image Generation: Addressing Overfitting and Evaluation Bias. *Preprint, Under Review. 2025* [Paper] [Code]

- Wei Sun, **Tingyu Qu**, Mingxiao Li, Jesse Davis, & Marie-Francine Moens. Mitigating Negative Interference in Multilingual Knowledge Editing through Null-Space Constraints. *Under Review. 2025*

- Xi Shi, **Tingyu Qu**, Gijs Van Pottelbergh, Marjan van den Akker & Bart De Moor. A Resampling Method to Improve the Prognostic Model of End-Stage Kidney Disease: A Better Strategy for Imbalanced Data. *Frontiers in Medicine (2022).* [Paper] *(Journal version of my MSc. Stat. thesis)*

* denotes equal contribution

Service

Reviewer: ACL, CVPR, ICCV, BMVC, NeurIPS, AAAI, ICLR, AISTATS, ICML, TPAMI

Skills

Programming Languages: Python (Mainly use PyTorch for research), R, MATLAB
Languages: Mandarin (Native), English (Full proficiency)

Reference

Prof. Marie-Francine Moens (sien.moens@kuleuven.be), full professor, Department of Computer Science, KU Leuven
Prof. Tinne Tuytelaars (tinne.tuytelaars@kuleuven.be), full professor, Department of Electrical Engineering, KU Leuven