Mingxiao Li

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Education

KU Leuven — Leuven, Belgium
Ph.D. in Computer Science — *Sept. 2019 - present*
- Advisor: Prof. Marie-Francine Moens
- Research Interests: Vision-Language, Generative Models, Large Vision-Language Model

KU Leuven — Leuven, Belgium
Master of Artificial Intelligence — *Sept. 2018 - Sept. 2019*

KU Leuven — Leuven, Belgium
Master of Quantum Chemistry and Computational Modeling — *Sept. 2016 - Jun. 2018*

East China University of Science and Technology — Shanghai, China
Bachelor of Material Physics — *Sept. 2011 - Jun. 2015*
- *Academic scholarship*: Academic year 2011-2012, 2012-2013, 2013-2014,2014-2015
- *Honors Graduate*: (Top 5% students in Department of Material)

Research Interest

Vision-Language Models are critical for constructing AI systems that can communicate with humans. My previous research focused on knowledge-based visual question answering and visual dialogue. Additionally, I have explored the use of vision-language models in embodied AI, where we leverage text-to-image models to assist agents in decision-making. (This work was recognized as an oral presentation at AAAI)

Visual Generative Models are crucial components in the development of AGI. My prior research focuses on advancing the sampling algorithm of diffusion model through shifting time steps, and on designing controllable video generation with diffusion model, which involved animating images in accordance with customized object motions to align with user expectations.

LLM & MLLM are crucial for developing general AI systems. Beyond image processing, enabling LLMs to understand videos is also important. I recently initiated a project aimed at enhancing LLMs with the capability to comprehend extended videos.

Selected Publications

- **Mingxiao Li***, Bo Wan*, Marie-Francine Moens & Tinne Tuytelaars. Animate Your Motion: Turning Still Images into Dynamic Videos. *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. *International Conference on Learning Representations (ICLR 2024).* [Paper] [Code (DDPM ver.)][Code (ADM ver.)]
- Mang Ning, **Mingxiao Li**, Jianlin Su, Albert Ali Salah & Itir Onal Ertugrul. Elucidating the Exposure Bias in Diffusion Models. *International Conference on Learning Representations (ICLR 2024).* [Paper] [Code]
- Jingyuan Sun*, **Mingxiao Li***, Zijiao Chen, Yunhan Zhang, Shaonan Wang, & Marie-Francine Moens. Contrast, Attend and Diffuse to Decode High-Resolution Images from Brain Activities. *Advances on Neural Information Processing Systems. (NeurIPS 2023).* [Paper] [Code]
- **Mingxiao Li***, Zehao Wang*, Tinne Tuytelaars, & Marie-Francine Moens. Layout-Aware Dreamer for Embodied Visual Referring Expression Grounding. *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI 2023)* **(Oral Presentation)**. [Paper] [Code]
- **Mingxiao Li**, Marie-Francine Moens. Dynamic Key-value Memory Enhanced Multi-step Graph Reasoning for Knowledge-based Visual Question Answering. *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI 2022).* [Paper][Code]
- **Mingxiao Li**, Marie-Francine Moens. Modeling Coreference Relations in Visual Dialog. *The 16th Conference of the European Chapter of the Association for Computational Linguistics (EACL 2021).* [Paper][Code]

Preprint

- Jingyuan Sun*, **Mingxiao Li***, Zijiao Chen, & Marie-Francine Moens. NeuroCine: Decoding Vivid Video Sequences from Human Brain Activities.[Paper]

* denotes equal contribution

Award

European Union Erasmus Mundus Full Scholarship. (2016-2018)

Chinese Government Scholarship for Outstanding Undergraduate Students. (2015)

Services

Reviewer: ICLR, NeurIPS, EMNLP, ACL, AAAI, EACL, ECML, ECAI

Workshop Organizer: AAAI-2024 Workshop: Artificial Intelligence for Brain Encoding and Decoding (AIBED)

Students & Mentees

Jaron Maene, Master Student in KU Leuven
Master Thesis: Sparse Neural Network and the Lottery Ticket Hypothesis

Hash Khetan, Master Student in KU Leuven
Master Thesis: Enhancing News Image Captioning Models with Pointer Generator

Arnout Hillen, Master Student in KU Leuven
Master Thesis: Understanding What Information is Captured by Transformer-based Language Model

Martijn Leplae, Master Student in KU Leuven
Master Thesis: Finding Waldo using Weakly-Supervised CVAEs

Triet Ngo, Master Student in KU Leuven
Master Thesis: Weakly Supervised Person-Centric Visual Grounding

Jonathan Swinnen, Master Student in KU Leuven
Master Thesis: A Look into the Human Mind: Improving fMRI-to-Image LDMs with a Two-Stage Approach

Skills

Programming Languages: Python (Mainly use PyTorch for research), Java, 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

List of Publications

(Sort in chronological order)

- **Mingxiao Li***, Bo Wan*, Marie-Francine Moens & Tinne Tuytelaars. Animate Your Motion: Turning Still Images into Dynamic Videos. *European Conference on Computer Vision (ECCV 2024)* .[Paper] [Code]

- Sun, Wei, **Mingxiao Li***, Jingyuan Sun, & Marie-Francine Moens. DMON: A Simple yet Effective Approach for Argument Structure Learning. *Proceedings of LREC-COLING 2024 - The 2024 Joint International Conference on Computational Linguistics, Language Resources and Evaluation, Page 5109–5118*

- Jingyuan Sun, Mingxiao Li, Cartuyvels Ruben & Marie-Francine Moens. ERC Advanced Grant Project CALCULUS: Extending the Boundary of Machine Translation. *Proceedings of Association for Machine Translation, Page 16-17*

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

- Mang Ning, **Mingxiao Li**, Jianlin Su, Albert Ali Salah & Itir Onal Ertugrul. Elucidating the Exposure Bias in Diffusion Models. *International Conference on Learning Representations (ICLR 2024).* [Paper] [Code]

- Jingyuan Sun*, **Mingxiao Li***, Zijiao Chen, Yunhan Zhang, Shaonan Wang, & Marie-Francine Moens. Contrast, Attend and Diffuse to Decode High-Resolution Images from Brain Activities. *Advances on Neural Information Processing Systems. (NeurIPS 2023).* [Paper] [Code]

- Jingyuan Sun*, **Mingxiao Li***, Zijiao Chen, & Marie-Francine Moens. Decoding Realistic Images from Brain Activity with Contrastive Self-supervision and Latent Diffusion. *Proceedings of the 26th European Conference on Artificial Intelligence*

- **Mingxiao Li***, Zehao Wang*, Tinne Tuytelaars, & Marie-Francine Moens. Layout-Aware Dreamer for Embodied Visual Referring Expression Grounding. *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI 2023)* **(Oral Presentation)**. [Paper] [Code]

- **Mingxiao Li**, Marie-Francine Moens. Dynamic Key-value Memory Enhanced Multi-step Graph Reasoning for Knowledge-based Visual Question Answering. *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI 2022).* [Paper][Code]

- **Mingxiao Li**, Marie-Francine Moens. Modeling Coreference Relations in Visual Dialog. *The 16th Conference of the European Chapter of the Association for Computational Linguistics (EACL 2021).* [Paper][Code]

Preprint

- Zehao Wang*, **Mingxiao Li***, Minye Wu, Marie-Francine Moens & Tinne Tuytelaars. Find a way forward: a language-guided semantic map navigator

- Jingyuan Sun*, **Mingxiao Li***, Zijiao Chen, & Marie-Francine Moens. NeuroCine: Decoding Vivid Video Sequences from Human Brain Activities.[Paper]

- Wei Sun, **Mingxiao Li**, Damien Sileo, Jesse Davis & Marie-Francine Moens. Generating Explanations in Medical Question-Answering by Expectation Maximization Inference over Evidence

- Wei Sun, **Mingxiao Li**, Jesse Davis, Elena Cabrio, Serena Villate, & Marie-Francine Moens. Weakly- supervised Argument Mining with Boundary Refinement and Relation Denoising

- Jaron Maene, **Mingxiao Li**, & Marie-Francine Moens. Towards understanding iterative magnitude pruning: Why lottery tickets win