Hua XU

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EDUCATION

- **The Hong Kong University of Science and Technology (Guangzhou)** *09/2023 - 06/2027 (Expected)*
  BSc in Data Science and Big Data Technology Guangzhou, China
  ◦ GPA: **3.902/4.300**; Dean's List for three semesters. (*The university does not rank students based on GPA.*)
- **University of California, Los Angeles** *09/2025 - 01/2026 (Expected)*
  Global Extension Program Los Angeles, USA

I speak English (*fluent*), Chinese (*native*) and Cantonese (*elementary speaking; advanced listening*).

ACADEMIC PAPERS

**Equal contribution, †Corresponding author.*

[1] **Hua XU**. "Building Interpretable, Trustworthy Systems for Neural Signal Decoding". Accepted by *the 40th Annual AAAI Conference on Artificial Intelligence (**AAAI 2026**)*, Undergraduate Consortium Section.

[2] Yang Yang*, **Hua XU***, Zhangyi Hu*, Yutao Yue†. "RLIE: Rule Generation with Logistic Regression, Iterative Refinement, and Evaluation for Large Language Models". Submitted to *the 14th International Conference on Learning Representations (**ICLR'26**)*.

[3] Zhangyi Hu*, Jiemin Wu*, **Hua XU***, Mingqian Liao, Ninghui Feng, Bo Gao, Songning Lai, Yutao Yue†. "IMTS is Worth Time × Channel Patches: Visual Masked Autoencoders for Irregular Multivariate Time Series Prediction". Accepted by *the 42nd International Conference on Machine Learning (**ICML'25**)*.

[4] Yuchao ZHUO, **Hua XU**, Yucheng Liu, Duotun Wang, Jianhao Chen, Jiawei Li, Chutian Jiang, Tristan Camille Braud, Mingming Fan†. "vNeck: Electrical Muscle Stimulation Around the Neck for Eyes-Free Target Acquisition in Virtual Reality". **Best Paper** in *International Conference on Human-Engaged Computing (**ICHEC'25**)*.

SELECTED RESEARCH EXPERIENCES

- **Controllable Generation For Discrete Diffusion with Probabilistic Circuits** *Nov. 2025 - Present*
  *UCLA, Supervisor: **Prof. Anji Liu**, PhD in UCLA; **Prof. Guy Van den Broeck**, PhD in KU Leuven* Los Angeles, USA
  ◦ While discrete diffusion models are gaining prominence in language modeling, controlling their generation to prevent harmful outputs remains difficult due to the categorical nature of text, which precludes standard gradient based guidance. To address this, this project leverages probabilistic circuits to estimate intractable posteriors during conditional generation, effectively steering the probability distribution to ensure safety and avoid toxic content.
  ◦ In this project, I'm acting as a **project lead**, **proposing ideas** and **writing codes**.
- **Real-time Error Corrector in Autoregressive Image Generation** *May 2025 - Present*
  *HKU, Mentor: **Prof. Andrew Luo**, PhD in CMU* Hong Kong, China
  ◦ While diffusion models are the dominant paradigm for high-fidelity image generation, their computational cost has spurred interest in more efficient autoregressive methods. To close the quality gap, this project develops an online error correction module designed to improve the image fidelity of autoregressive models during the generation process, thereby enabling high-quality and high-speed synthesis.
  ◦ I'm acting as the **project lead**. This paper is going to be submitted to a Workshop at **ICLR'26**.
- **Large Language Model Based Rule Generation with Logistic Regression** *Mar. 2025 - Present*
  *HKUST(GZ), Supervisor: **Prof. Yutao YUE**, PhD in Purdure* Guangzhou, China
  ◦ While LLMs can propose rules in natural language, existing methods overlook rule combination effects and lack robust probabilistic integration. To address this, the project introduces RLIE, a unified framework integrating LLMs with probabilistic modeling through four stages: rule generation via LLM, weight learning through logistic regression, iterative refinement, and evaluation, achieving higher rule quality and better rule combination effects.
  ◦ As a core contributor to this research project, I was actively involved in the **idea formation** and the **paper writing** process. This research paper is submitted to **ICLR'26**.
- **Irregular Multivariate Time Series Prediction Using Vision Foundation Model** *Dec. 2024 - May 2025*
  *HKUST(GZ), Supervisor: **Prof. Yutao YUE**, PhD in Purdure* Guangzhou, China
  ◦ To address irregular multivariate time series (IMTS) prediction challenges with unaligned signals and massive missing values, the project tries to leverage the power of visual pretrained masked autoencoders, converting sparse data into time × channel image-like patches. This captures cross-channel interactions, achieving superior accuracy and strong few-shot performance in IMTS tasks.
  ◦ As a core contributor to the research project, I was actively involved in **designing and conducting experiments**, **writing the academic paper**, and participating the **rebuttal** process. This research paper is accepted by **ICML'25**.

SELECTED PROJECT EXPERIENCES

- **Utilising Chromoprotein Expression to Counteract Coral Bleaching** *Feb. 2024 - Oct. 2024*
  *Team Leader & Wet Lab Leader, Mentor: **Prof. Julie Qiaojin LIN**, PhD in Cambridge* Guangzhou, China
  ◦ To address coral bleaching problems, the project aims to design a genetic circuit conditionally expressing chromoprotein regulated by heat and light intensity, mimicsing the protective effects of turbid waters and thereby reduces the damages caused by high temperature and high light intensity to corals.
  ◦ As the **team leader and wet lab lead**, I successfully manged to **coordinate 15 UG members and 10 PhD students** to finish the project: I initiated the project, formed the team, and oversaw team managements **(members recruitment, budgeting & foundraising 42K USD, coordinating, etc.)** as well as all wet lab workflows . **I designed the biological circuit**, conducting characterization experiments for light sensitive proteins. The project was eventually awarded by the best competition in synthetic biology **iGEM**. More details can be seen at 2024 Team Wiki.

Selected Achievements

- **National Scholarship** *Nov. 2024*
  Ministry of Education of the People's Republic of China
  - **Sole awardee in the whole campus.**
- **Gold Medal, Nomination Prize of Best New Basic Part** *Oct. 2024*
  International Genetically Engineered Machine Competition (iGEM)
  - Gold medal for excellence in synthetic biology and efforts in bridging lab sciences and coral protection practices. Nominated for solid experiment designs and comprehensive characterizations of biological sensors.

Volunteering and Public Serving

- **Major Mentor** *Nov. 2024 - Present*
  University Team for the International Genetically Engineered Machine Competition (iGEM)
  - Acting as the major mentor for the team, mentoring **25 undergraduate students**. Responsibility includes team building, wet lab training, training writing & presentation skills, and project supervision. The team eventually won **Gold Medal** in the **International Genetically Engineered Machine Competition (iGEM)** in 2025. More details can be seen at 2025 Team Wiki.
- **Committee Member** *Jul. 2025 - Present*
  The Senate Committee on Teaching and Learning Quality of HKUST(GZ)
  - Representing undergraduate interests and contributing to university-level decision-making on teaching and learning quality.
- **Presidium Member** *Apr. 2025 - Present*
  Student Union of HKUST(GZ)
  - Serving as a leading member of the university's inaugural student union presidium, establishing foundational operating structures and procedures.
- **Senate Member** *Jul. 2024 - Jul. 2025*
  The Senate of HKUST(GZ)
  - Acted as a student representative in the University Senate, advocating for undergraduate interests in institutional decision-making.