

TAICHI LIU

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EDUCATION

ShangHai Jiao Tong University	<i>Sep 2016 – Aug 2020</i>
Bachelor Degree in Electrical and Computer Engineering	
Tsinghua University	<i>Sep 2020 – Aug 2023</i>
M.S. in Electrical Engineering (Dual Degree), FIB Lab. Supervisor: Prof. Yong Li	
Johns Hopkins University	<i>Sep 2021 – Aug 2022</i>
M.S.E in Biomedical Engineering (Dual Degree)	
Rutgers University	<i>Sep 2023 – present</i>
PhD in Computer Science, GPA: 4.0/4.0, Arsenal Lab. Supervisor: Prof. Desheng Zhang	

RESEARCH EXPERIENCE

Cold-Start Item Recommendation	<i>Tsinghua University, Sep 2022 - Feb 2023</i>
· Propose an uncertainty-aware method to balance cold and warm items in the cold-start recommendation.	
· Design a teacher-student consistency learning framework in GNNs to reduce item-level and model-level bias.	
· Achieve a 27.6% improvement for all items and more than 7 times improvement for cold items on average.	
Towards 3D Objectness Learning in an Open World	<i>Rutgers University, Feb 2024 - Sep 2024</i>
· We are the first to formally define and address class-agnostic open-world 3D object detection in 3D domain.	
· Propose the cross-modal mix-of-expert mechanism to boost multi-modal learning in class-agnostic detection.	
· Achieve a more than 13.5% improvement compared to existing closed-world and open-vocabulary 3D detectors.	
Unified Object Understanding and Generation in MLLMs	<i>Rutgers University, Feb 2025 - Sep 2025</i>
· Design object parser to decompose input data and simplify reasoning process for complex multimodal tasks.	
· Propose region-level image generation based on diffusion for multi-object image generation.	
· Achieve 17% improvement on image generation tasks and 3% improvement on image understanding tasks.	

INTERN EXPERIENCE

User Consumption Intention Prediction	<i>User Profile Group, Meituan, Sep 2020 - July 2021</i>
· Integrate our intention prediction model into the recall engine of the recommender systems in MeiTuan, and feed the improved pool into the ranking engine for the final recommendation.	
· Online A/B tests show the page view for cold-start customers improves in a new business unit by 11.79% and 83.9% customer growth rate across all business units compared to traditional models.	

PUBLICATIONS

[Preprints] **Taichi Liu**, Zhenyu Wang, Yan Bai, Fei Xia, Hengshuang Zhao, “UniOUG: Empowering Large Multimodal Models with Unified Object-Level Understanding and Generation.”

[NeurIPS 2025] **Taichi Liu**, Zhenyu Wang, Ruofeng Liu, Guang Wang, Desheng Zhang, “Towards 3D Objectness Learning in an Open World.”

[SIGIR 2023] **Taichi Liu**, Chen Gao, Zhenyu Wang, Dong Li, Jianye Hao, Depeng Jin, Yong Li, “Uncertainty-aware Consistency Learning for Cold-Start Item Recommendation.”

[ECCV 2024] Zhenyu Wang, Yali Li, **Taichi Liu**, Hengshuang Zhao, Shengjin Wang, “OV-Uni3DETR: Towards Unified Open-Vocabulary 3D Object Detection via Cycle-Modality Propagation.”

[CIKM 2024] Guang Yang, Meiqi Tu, Zelong Li, Jinquan Hang, **Taichi Liu**, Ruofeng Liu, Yi Ding, Yu Yang, Desheng Zhang, “Behavior-Aware Hypergraph Convolutional Network for Illegal Parking Prediction with Multi-Source Contextual Information.”

[KDD 2021] Yukun Ping, Chen Gao, **Taichi Liu**, Xiaoyi Du, Hengliang Luo, Depeng Jin, Yong Li, “User Consumption Intention Prediction in Meituan.”