Xuchen Li, Undergraduate Student

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https://xuchen-li.github.io/ Google Scholar Xuchen-Li
Visual Object Tracking, Multi-modal Object Tracking

Education

2020.9 - Present **Undergraduate Student, School of Computer Science, Beijing University of Posts and Telecommunications (SCS, BUPT)**
Major: Computer Science and Technology
Diploma project supervisor: Prof. Kaiqi Huang (IAPR Fellow)
Thesis title: *Design and Implementation of Multi-modal Single Object Tracking System Based on Text Guidance.*

Experiences

2023.05 - Present **Research intern** on visual object tracking at Institute of Automation, Chinese Academy of Sciences (CASIA), advised by Prof. Kaiqi Huang (IAPR Fellow).

Participant of interdisciplinary symposia around computer vision (22 participants from 10+ universities, once a week) at Institute of Automation, Chinese Academy of Sciences (CASIA), initiated and organized by Dr. Shiyu Hu.

2023.04 - Present **Member of Artificial Intelligence Elites Class** at Institute of Automation, Chinese Academy of Sciences (CASIA).

2023.03 - Present **Deputy Secretary of the Undergraduate Party Branch** at School of Computer Science, Beijing University of Posts and Telecommunications (SCS, BUPT).

2023.01 - 2023.05 **Research intern** on 3D indoor scene reconstruction at Tsinghua University (THU), advised by Prof. Haoqian Wang.

2022.08 - 2023.01 **Research intern** on personalized federated learning at Beijing University of Posts and Telecommunications (BUPT), advised by A/Prof. Bingyan Liu.

2022.06 - 2023.06 **President of the Volunteer Association** at School of Computer Science, Beijing University of Posts and Telecommunications (SCS, BUPT).

2021.09 - 2023.07 **Monitor / Deputy Monitor of the Major Class** at School of Computer Science, Beijing University of Posts and Telecommunications (SCS, BUPT).

2020.09 - 2021.07 **Secretary of the Youth League Branch** at School of Computer Science, Beijing University of Posts and Telecommunications (SCS, BUPT).

Research Publications

Conference Proceedings

1 S. Hu, D. Zhang, M. Wu, X. Feng, **X. Li**, X. Zhao, and K. Huang, "A multi-modal global instance tracking benchmark (mgit): Better locating target in complex spatio-temporal and causal relationship," in *the 37th Conference on Neural Information Processing Systems (NeurIPS, CCF-A Conference, Poster)*, 2023.

R&D Projects

Co-developer of Platform Maintenance & Upgrade

2023.12 - Now

VideoCube: A large-scale multi-dimensional global instance tracking intelligent evaluation platform.
Link: http://videocube.aitestunion.com.
Description: VideoCube presents a video content decoupling framework and implements a large-scale, multi-dimensional global instance tracking intelligent evaluation platform comprising 7.46 million frames. Moreover, a multi-granularity semantic annotation strategy has been proposed to enhance VideoCube's capability in providing high-quality semantic information, thus enabling support for multi-modal research.
Note: VideoCube is the supporting platform for two researches accepted by TPAMI and NeurIPS. It receives 236k+ page views, 1k+ downloads, 360+ trackers from 130+ countries (statistics by 2023.10).

SOTVerse: A user-defined single object tracking task space.
Link: http://metaverse.aitestunion.com.
Description: SOTVerse introduces a 3E paradigm as a task analysis framework, integrating representative datasets to transform the original static closed datasets into a dynamic open data space comprising 12.56 million frames. Additionally, a subspace construction method is proposed to facilitate user-defined task studies.
Note: SOTVerse is the supporting platform for a research accepted by IJCV. It receives 88k page views from 100+ countries (statistics by 2023.10).

GOT-10k: A large high-diversity benchmark and evaluation platform for single object tracking in the wild.
Link: http://got-10k.aitestunion.com/.
Description: GOT-10k is constructed to evaluate the generalization ability of trackers on unseen object classes and motion patterns. The platform provides a high-quality video trajectory dataset containing 10,000 video segments, 563 object classes, 87 motion patterns, and 1.5 million tight annotations, where its coverage of object classes is magnitudes wider than other existing tracking benchmarks.
Note: GOT-10k is the supporting platform for a research accepted by TPAMI. It receives 2.44M page views, 6k+ downloads, 14k+ trackers from 150+ countries. (statistics by 2023.8).

Independent developer of Project Research

2023.09 - Present

Design and Implementation of Multi-modal Single Object Tracking System Based on Text Guidance.
Description: We present a simple, flexible and effective vision-language (VL) tracking pipeline, which casts VL tracking as a token generation task. Our proposed framework serializes language description and bounding box into a sequence of discrete tokens. In this new design paradigm, all token queries are required to perceive the desired target and directly predict spatial coordinates of the target in an autoregressive manner, allowing our tracker to use a simple cross-entropy loss as unified optimization objective for VL tracking task.
Note: The project is a part of my B.S. thesis in BUPT.

R&D Projects (continued)

Co-developer of Project Research

2023.05 - 2023.09 **MGIT: A Multi-modal Video Tracking Evaluation Benchmark for Complex Spatio-temporal Causality.**
Link: http://videocube.aitestunion.com.
Description: MGIT implements a large-scale, multi-dimensional global instance tracking intelligent evaluation platform comprising 7.46 million frames. Moreover, a multi-granularity semantic annotation strategy has been proposed to enhance its capability in providing high-quality semantic information, thus enabling support for multi-modal research.
Note: MGIT has been accepted by NeurIPS.

Skills

Languages Mandarin Chinese (native speaker) and English.
Coding Python, C++, C, LaTeX.
Linux Shell.
Misc. Academic research, leadership, presentation.

Awards and Honors

2023 **China National Scholarship**, Ministry of Education of the People's Republic of China (Top 1%, Ranking 1/455).
Beijing Municipal Merit Student, Beijing Municipal Education Commission.
College Scholarship of University of Chinese Academy of Sciences, University of Chinese Academy of Sciences.
National Third Prize, Huawei Information and Communication Technology Competition Nationwide Final (Team leader).
National Third Prize, China Robotics and Artificial Intelligence Competition.
National Level Program, College Students' Innovation and Entrepreneurship Training Program (Team leader).
National Level Program, College Students' Innovation and Entrepreneurship Training Program.
Provincial First Prize, China International 'Internet+' College Students' Innovation and Entrepreneurship Competition Beijing Division.

2022 **China National Scholarship**, Ministry of Education of the People's Republic of China (Top 1%, Ranking 2/430).
Huawei AI Education Base Scholarship, Ministry of Education of China and Huawei AI Education Base Joint Working Group.
International First Prize, Mathematical Contest in Modeling and Interdisciplinary Contest in Modeling.
National First Prize, China Collegiate Computing Contest-Artificial Intelligence Innovation (Team leader).

2021 **China National Encouragement Scholarship**, Ministry of Education of the People's Republic of China.
Haohan Scholarship and Grants, Beijing Haohan DATA Technology Co., Ltd.