YUNCONG YANG

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EDUCATION

University of Massachusetts, Amherst **Amherst, MA**
Ph.D. student in Computer Science *Sep 2024 - Present*
Advisor: Chuang Gan
Research Interests: Embodied AI, Multi-modal Foundation Models, Robotics

Columbia University **New York, NY**
M.S. in Computer Science *Graduated Dec 2022*
Advisor: Shih-Fu Chang
Research Interests: Computer Vision, Multi-modal Foundation Models

Columbia University **New York, NY**
B.S. in Computer Science: Intelligent Systems Track *Graduated May 2021*
GPA: 4.05/4.33 (Top 5%) | Summa Cum Laude

PUBLICATIONS

SnapMem: Snapshot-based 3D Scene Memory for Embodied Exploration and Reasoning **Under Review**
Yuncong Yang*, Han Yang*, Jiachen Zhou, Peihao Chen, Hongxin Zhang, Yilun Du, Chuang Gan

TempCLR: Temporal Alignment Representation with Contrastive Learning **ICLR 2023**
Yuncong Yang*, Jiawei Ma*, Shiyuan Huang, Long Chen, Xudong Lin, Guangxing Han, Shih-Fu Chang

MineDojo: Building Open-Ended Embodied Agents with Internet-Scale Knowledge **NeurIPS 2022**
[Outstanding Paper Award, Featured Paper Presentation]
Linxi "Jim" Fan, Guanzhi Wang, Yunfan Jiang, Ajay Mandlekar, **Yuncong Yang**, Haoyi Zhu, Andrew Tang, De-An Huang, Yuke Zhu†, Anima Anandkumar†

Few-Shot End-to-End Object Detection via Constantly Concentrated Encoding Across Heads **ECCV 2022**
Jiawei Ma, Guangxing Han, Shiyuan Huang, **Yuncong Yang**, Shih-Fu Chang

RESEARCH EXPERIENCE

University of Massachusetts, Amherst
Doctoral Research Assistant | Advisor: Prof. Chuang Gan *Sep 2024 - Now*
Embodied AI and 3D Scene Understanding
- Developed SnapMem, a snapshot-based scene memory for 3D environments that empowers VLM agents with lifelong exploration and reasoning abilities.

MIT-IBM Watson AI Lab
Research Assistant Intern | Advisor: Prof. Chuang Gan *Apr 2023 - Aug 2024*
Foundation Models for Robotics
- To address underfitting issues caused by heterogeneous datasets and varying observation spaces in large-scale robotics training, we integrated a Mixture of Experts (MoE) architecture into the Decision Transformer.

Nvidia
Research Assistant Intern | Advisor: Dr. Jim Fan *Feb 2022 - Feb 2023*
Embodied AI and LLM Agents
- Contributed to MineDojo, a Minecraft-based benchmark for open-ended embodied agents, by leading the design of its comprehensive task suite and assisting in the development of MineCLIP, a video-language model that serves as a reward function for agents.
- Contributed to Voyager, an LLM-powered code generation agent on Minecraft, by designing Python APIs for MineDojo to support efficient code generation, comprehensive data generation, and training pipelines.

Columbia University
Research Assistant | Advisor: Prof. Shih-Fu Chang *Dec 2021 - Dec 2022*
Video Understanding
- Developed a sequence-level contrastive learning framework that leverages temporal order consistency for long-video understanding, achieving significant performance improvements in video-text retrieval, action step localization, and few-shot video action recognition.

PROJECTS

Dynamic Grasping with Moving Obstacles
Advisor: Prof. Shuran Song *Sep 2021 - Dec 2021*
- Tackled the problem of grasping a moving item with moving obstacles by modeling the target item and obstacles as 3D bounding boxes for real-time prediction of their future poses.

Adversarial Training for Few-Shot Classification
Advisor: Prof. Junfeng Yang *Sep 2021 - Dec 2021*
- Enhanced the effectiveness of adversarial training for few-shot classifier by attacking query-set and support-set simultaneously.

AWARDS & HONORS

- Outstanding Paper Award, *NeurIPS 2022 Datasets and Benchmarks Track*
- Summa Cum Laude, *Columbia University*
- Student Member, *Phi Beta Kappa*
- Dean's List (8 semesters)

TEACHING EXPERIENCES

Introduction to Computation, University of Massachusetts, Amherst *Fall 2024*
Computer Vision II, Columbia University *Spring 2022*