

Yiqing Liang

+1 6177840224 | yiqing_liang@brown.edu
[Personal webpage](#) | [Google Scholar](#) | [LinkedIn](#)

Education

Brown University

Ph.D. in Computer Science

Providence, RI

Sep 2021–

- Advisor: [Professor James Tompkin](#)

Columbia University

M.S. (Thesis) in Computer Science

New York, NY

Aug 2019 – May 2021

- Advisor: [Professor Shuran Song](#) & [Professor Shih-Fu Chang](#)
- GPA: 3.83/4.00
- Selected awards: First Place in 2019 Columbia Data Science Hackathon
- Core courses: Computer Vision (A), Robot Learning (A), Thesis (A)

Massachusetts Institute of Technology (MIT)

Exchange Student, Electrical Engineering and Computer Science

Cambridge, MA

Feb 2018 – Jun 2018

- Special Student Program
- GPA: 5.00/5.00
- Core Courses: Intro to Machine Learning (A), Applied Probability (A)

Fudan University

B.S. in Computer Science, Best Thesis Honor (A)

Shanghai, China

Sep 2015 – Jun 2019

- Major GPA: 3.62/4.00
- Selected awards: Excellent Student Scholarship (5%, 2016), Excellent Student Leader (5%, 2016)
- Core courses: Linear Algebra (A-), Artificial Intelligence (A), Programming (A)

Publications

Semantic Attention Flow Fields for Dynamic Scene Decomposition

Yiqing Liang, Eliot Laidlaw, Alexander Meyerowitz, Srinath Sridhar, James Tompkin

In review.

Sgeitl: Scene graph enhanced image-text learning for visual commonsense reasoning

Zhecan Wang, Haoxuan You, Liunian Harold Li, Alireza Zareian, Suji Park, **Yiqing Liang**, Kai-Wei Chang, Shih-Fu Chang

Proceedings of the AAAI Conference on Artificial Intelligence (AAAI), 2022

[Project](#) [Arxiv](#)

SSCNav: Confidence-Aware Semantic Scene Completion for Visual Semantic Navigation

Yiqing Liang, Boyuan Chen, Shuran Song

International Conference on Robotics and Automation (ICRA), 2021

[Project](#) [Arxiv](#)

Research Experience

Columbia University

Research Assistant to [Professor Shih-Fu Chang](#)

New York, NY

Semantically Relevant Scene Graphs for Visual Commonsense Reasoning

Oct 2020 – Nov 2020

- Applied visual scene graphs in a Transformer-based framework for visual commonsense reasoning (VCR) task and to design a weakly supervised training strategy to generate semantically relevant scene graphs.
- Generated offline object detection features of Visual Genome dataset with bottom-up-attention model for scene graph generation.
- Organized large-scale code to re-implement a scene graph generator (Neural Motif) for ablation study.

Research Assistant to [Professor Shuran Song](#)

SCTR: Scene Completion Transformer

Aug 2020 - April 2021

- Innovated a novel indoor scene completion method by making use of Transformer-based models' capacity to capture high-level commonsense context to build hierarchical indoor graphs.
- Utilized Matterport3D houses to generate a large-scale dataset (50 thousand) of indoor scene's egocentric top-down maps with annotated object and room information sequences and helper functions.
- Performed extensive experiments to explore different representations and configurations.

SSCNav: Confidence-Aware Semantic Scene Completion for Visual Navigation [Link](#)

Sep 2019 - Oct 2020

- Justified explicitly utilizing scene priors as semantic scene completion with self-calibrated confidence estimation and spatial action map could help object-goal navigation.
- Proposed a pipeline consisting of scene completion, confidence and navigation modules.
- Trained with DDQN; SR: 27% and SPL: 16% ~SOTA on Habitat Challenge 2020 ObjectNav (subset).

MIT (Department of Electrical Engineering and Computer Science)

Cambridge, MA

Research Assistant to [Professor Antonio Torralba](#)

Indoor Scene Context Analysis

Jul 2018 - Aug 2018

- Aimed to employ reinforcement learning methods to help agents understand indoor scene context, a step towards visual context understanding rather than traditional vision tasks.

VirtualHome Environment Development

Jun 2018

- Created APIs for VirtualHome, an interactive 3D indoor environment built in Unity3D, to lay a solid foundation for future exploration.

Efficient Indoor Navigation by Visual Signal

Mar 2018 - May 2018

- Taught agents to do short-distance in-door self-navigation in the House3D environment through Reinforcement Learning (RL) with higher efficiency by removing redundant network components.

Fudan University, Department of Computer Science

Shanghai, China

Research Assistant to Professor Wei Zhang

Video Object Segmentation Algorithm Study (Best BS Thesis)

Dec 2018 - May 2019

- Proposed to employ Superpixel SSN and majority vote to improve the SOTA OSVOS algorithm.
- Outperformed OSVOS on DAVIS dataset's validation set on 4/6 metrics J_m, J_o, F_m, F_d .

Research Assistant to Professor Yaqian Zhou

Automatic Writing Identification

Oct 2016 - Jan 2017

- Identified Chinese characters (accuracy: 0.81): created an algorithm to cut words out of pages with lines from pupils' hand-written exercises.

Work Experience

SenseTime

Shanghai, China

Education Research Intern

Aug 2018 - Mar 2019

- Applied Unity3D to create 3D mazes where robots could be manipulated to play around as a base programming education environment for high school students.
- Introduced a C sharp-Python parser to allow Python control in Unity3D by typing in interactive text boxes, thus enabling high school students to acquire Python programming in aforementioned maze.
- Led AI education's RL section: gave lectures to high school students, wrote textbooks, designed exercises and implemented projects.

NS Solutions (Shanghai) Co., Ltd

Shanghai, China

SDE Intern

Jul 2017 - Aug 2017

- Designed a data visualization plan for clients with a whole set of Tableau projects.
- Created a financial report generation algorithm with excel VBA attached.
- Developed calculation part of an automatic retail management software.

Skills

Languages: Mandarin (native), English (fluent), Japanese (proficient).

Programming Languages: Python, Bash, C, C++, HTML, C sharp, JAVA, MATLAB.

Operating Systems: macOS, Linux, Windows.

Research skills: Github, PyTorch, OpenCV, Numpy, CUDA, Matplotlib, Tensorboard, Tmux.