Yiqing Liang

+1 6177840224 | lynl7130@163.com
Personal webpage: https://yiqing-liang.netlify.app/

Education

Columbia University New York, NY
M.S.(Thesis) in Computer Science (Expected in May 2021) Aug 2019 – Present
- GPA: 3.83/4.00
- Selected award: First Place in 2019 Columbia Data Science Hackathon
- Core courses: Computer Vision (A), Robot Learning (A), Thesis (A)

Massachusetts Institute of Technology (MIT) Cambridge, MA
Exchange Student Feb 2018 – Jun 2018
- Special Student Program
- GPA: 5.00/5.00
- Core Courses: Intro to Machine Learning (A), Applied Probability (A)

Fudan University Shanghai, China
B.S. in Computer Science, Best Thesis Honor(A) Sep 2015 – Jun 2019
- 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)

Research Projects

Columbia University New York, NY
Research Assistant advised by Professor Shih-Fu Chang
Semantically Relevant Scene Graphs for Visual Commonsense Reasoning (Submitted to CVPR 2021)
Oct 2020 – Nov 2020
- The first to apply visual scene graphs in a Transformer-based framework for visual commonsense reasoning (VCR) task and design a weakly supervised training strategy to generate semantically relevant scene graphs.
- Generated offline object detection features of Visual Genome dataset using bottom-up-attention model for scene graph generation.
- Organized large-scale code to reimplement a scene graph generator (Neural Motif) for ablation study

Research Assistant advised by Professor Shuran Song
SCTR: Scene Completion Transformer (Ongoing) Aug 2020 - Present
- A novel indoor scene completion method by making use of Transformer-based models's capability of capturing high-level commonsense context to build hierarchical indoor scene graphs.
- Generated a large-scale dataset (50 thousand) of indoor scene's egocentric top-down maps from Matterport 3D houses 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 Semantic Navigation (Submitted to ICRA 2021) Project Webpage Sep 2019 - Oct 2020
- Justified that explicitly utilizing scene priors in the form of semantic scene completion with self-calibrated confidence estimation and spatial action map could help object-goal navigation.
- Proposed a pipeline consisting of scene completion module, confidence module and navigation module.
- 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 advised by Professor Antonio Torralba
Indoor Scene Context Analysis (Python) Jul 2018 - Aug 2018

- Aimed to employ reinforcement learning methods to help agents understand the context of the indoor scene, which was 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 Reinforcement Learning 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 with higher learning efficiency by removing redundant network components.

Fudan University (Department of Computer Science) Shanghai, China

Research Assistant advised by Professor Wei Zhang

Video Object Segmentation Algorithm Study (Best BS Thesis) Dec 2018 - May 2019

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

Research Assistant advised by Professor Yaqian Zhou

Automatic Writing Identification Oct 2016 - Jan 2017

- Identified Chinese characters (accuracy:0.81) given hand-written exercise books of pupils, and created an algorithm to cut words out of pages with lines.
- Took Canny Edge Detection to remove everything other than characters and lines.
- Designed histogram with Gaussian filter to record the non-black pixels trend and cut out characters.

Work Experience

SenseTime Shanghai, China

Education Research Intern Aug 2018 – Mar 2019

- Adopted Unity3D to create 3D mazes where robots could move, turn, and do many other actions as the 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 learn Python programming in the maze.
- Led AI education's Reinforcement Learning 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 which was then attached to an excel VBA.
- Developed the calculation part of an automatic retail management software.

Additional Information

Coding Skills

- 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

Languages

- Mandarin (native), English (fluent), Japanese (proficient)

Interests

- Workout, Singing, Brewing Tea