

QIAN HUANG

(347)453-8499 \diamond qhwang@stanford.edu \diamond [q-hwang.github.io](https://github.com/qhwang)

RESEARCH INTERESTS

Machine Learning, Relational Reasoning, Robustness, Structured Representation, Graph Neural Network, Graph Algorithms

EDUCATION

Stanford University

Computer Science Ph.D. Candidate

September 2021 - Present

Cornell University

Bachelor of Arts in Computer Science and Mathematics, GPA: 4.1/4.3

August 2017 - May 2021

PUBLICATIONS

- **Qian Huang***, Abhay Singh*, Horace He, Sijia Linda Huang, Omkar Bhalerao, Ser-Nam Lim, Austin Benson. “[Edge Proposal Sets for Link Prediction](#) .” Under Review of TheWebConf, 2022.
- **Qian Huang***, Horace He*, Abhay Singh, Ser-Nam Lim, Austin Benson. “[Combining Label Propagation and Simple Models Out-performs Graph Neural Networks](#).” **ICLR**, 2021.
- **Qian Huang***, Horace He*, Abhay Singh, Yan Zhang, Ser-Nam Lim, Austin Benson. “[Better Set Representations For Relational Reasoning](#).” **NeurIPS**, 2020.
- **Qian Huang***, Horace He*, Abhay Singh, Yan Zhang, Ser-Nam Lim, Austin Benson. “[Better Set Representations For Relational Reasoning](#).” Proceedings of International Conference on Machine Learning (ICML): Object-Oriented Learning (OOL): Perception, Representation, and Reasoning workshop, 2020.
- **Qian Huang***, Isay Katsman*, Horace He*, Zeqi Gu*, Serge J. Belongie and Ser-Nam Lim. “[Enhancing Adversarial Example Transferability With an Intermediate Level Attack](#).” 2019 IEEE/CVF International Conference on Computer Vision (**ICCV**) (2019): 4732-4741.

AWARDS AND RECOGNITIONS

- 2020 CRA Finalist
- Phi Beta Kappa
- Dean’s List, Cornell University
- Women in Machine Learning 2019 Travel Funding
- First prize in the 33rd Chinese Physics Olympiad
- Top 10 in 2015 China Young Physicists’ Tournament
- National Physics Team Candidate for International Young Physicists’ Tournament

RESEARCH EXPERIENCE

Stanford University

PhD Student

September 2021 - Present

Palo Alto, CA

- **Identify and Solve the Hidden Puzzles (advised by Prof. Jiajun Wu)**

Propose a novel method to combine transformer based language model and SATNet to discover the reasoning problem structure underlying the given input (text and image) and solve it efficiently. The preliminary results over randomly padded sudoku board demonstrate both significant accuracy improvement and more interpretable reasoning.

Cornell University Artificial Intelligence (CUAI)

Undergraduate Researcher

August 2018 - May 2021

Ithaca, NY

- **Combining Label Propagation and Simple Models Out-performs Graph Neural Networks (advised by Prof. Austin Benson)**
Demonstrated that for most popular transductive node classification tasks, state-of-the-art GNN models can be out-performed by a shallow MLP prediction followed by the post-processing of two Label Propagation variants. This simple framework directly uses label information and drastically reduces the parameters and runtimes needed to achieve state-of-the-art. [\[under submission\]](#) [\[code\]](#)
- **Better Set Representations For Relational Reasoning (advised by Prof. Austin Benson)**
Demonstrated that a popular class of relational reasoning methods have the fundamental responsibility problem when learning to decompose input to set of entities. Developed a generally applicable Set Refiner Model (SRN) that resolves this issue through a simple inner optimization loop and improves the accuracy and robustness of relational reasoning systems on multiple domains. [\[paper\]](#) [\[code\]](#)
- **Intermediate Level Attack (advised Prof. Serge Belongie)**
Proposed a novel attack method that improves the transferability of adversarial examples substantially through optimizing the perturbation of intermediate features. Conducted extensive experiments to show the effectiveness of the attack and provide some explanatory insights. [\[paper\]](#) [\[code\]](#) [\[talk\]](#)

Cornell University

Undergraduate Research Assistant

May 2018 - May 2019

Ithaca, NY

- **Bridging Recurrent Neural Networks and Hidden Markov Model (co-advised by Prof. Robert Kleinberg and Prof. Jon Kleinberg)** Experimented with using different recurrent models to learn from data generated by simple HMM. Analyzed the potential suboptimal local minimum solution that can be given by Expectation Maximization algorithm.
- **Analyzing Shortest Augmenting Path (SAP) algorithm (advised by Robert Kleinberg)**
Analyzed the worst case bound of reassignments of SAP for the online bipartite matching with reassignment problem. Improved a major lemma to bound the total length of long augmented paths in SAP execution.

INDUSTRY EXPERIENCE

Allen Institute for Artificial Intelligence, PRIOR team

Research Intern

February 2021 - April 2021

Seattle, WA

- Creating new datasets of objects motion scene paired with language description using AI2Thor
- Designing new explainable models for predicting the object motion and counterfactual scenario
- Proposed ideas for improving the current AI2Thor and contributed to other project discussions.

LinkedIn, Hire AI team

Machine Learning and Relevance Engineer Intern

May 2019 - August 2019

Sunnyvale, CA

- Improved upon the in production candidates ranking model about 5% over major metric by adding query keywords embedding.
- Demonstrated that keywords bring about 30% lift in feature coverage through usage analysis.
- Proposed ideas for improving the current model and contributed to other adjacent projects.

TEACHING EXPERIENCE

Introduction to Analysis of Algorithms (CS 4820)

Undergraduate Teaching Assistant

Jan 2019 - Dec 2019

Ithaca, NY

- Held weekly office hours to help a class of 200 students understand the course materials better.
- Graded student homework and exams for over 10 hours each week.

Data Structure and Functional Programming (CS 3110)

Undergraduate Teaching Assistant

August 2018 - Dec 2018

Ithaca, NY

- Prepared and delivered two recitation sessions for 30 students weekly.
- Held several meet-ups with each project group and graded student projects.

Discrete Structures (CS 2800)

Undergraduate Teaching Assistant

Jan 2018 - May 2018

Ithaca, NY

- Held weekly office hours to help a class of 400 students understand the course materials better.
- Graded student homework and exams for over 5 hours each week.

LEADERSHIP & COMMUNITY SERVICE

Cornell University Artificial Intelligence (CUAI)

Research Member & Co-President

August 2018 - May 2021

Ithaca, NY

- Supervise research projects pursued by 12 undergraduate members through weekly meetings.
- Organize weekly reading groups and promote discussion about the cutting-edge papers.
- Connect members with faculty and Cornell PhDs through luncheons and talks.

Cornell Data Science (CDS) project team

Intelligent System Team co-Lead

Feb 2018 - Dec 2019

Ithaca, NY

- Held weekly team meeting, reading group and four deep learning workshops for students at Cornell.
- Designed end-to-end DL model to synthesis mandarin storyteller voice and isolate background music.
- Developed an auto-summarization slack app based on knowledge graph generation and compression.

Association of Computer Science Undergraduates

Academic Officer

April 2018 - May 2021

Ithaca, NY

- Promoted undergraduate research by co-organizing Research Night panel and PhD poster session.
- Organized ACSU G-body meeting of around 100 people and weekly discussion of reading groups.
- Presented computing theory paper in the reading group with 30 students.

COURSES

Undergraduate Level Courses

- Numerical Analysis
- Intro to Differential Geometry
- Honors Linear Algebra
- Machine Learning for Data Sciences
- Developmental Psychology
- Biopsychology of Learning & Memory

Graduate Level Courses

- Computer Vision
- Foundations of Reinforcement Learning
- Statistical Distance for Modern Machine Learning
- Analysis of Algorithms
- Algorithmic Game Theory
- Advanced Compilers