QIAN HUANG

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RESEARCH INTEREST

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

EDUCATION

Cornell University   *August 2017 - May 2021*
Bachelor of Arts in Computer Science and Mathematics, GPA: 4.1/4.3

PUBLICATIONS

- **Qian Huang***, Horace He*, Abhay Singh, Yan Zhang, Ser-Nam Lim, Austin Benson. "Better Set Representations For Relational Reasoning." **Under Review** of 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." Proceedings of Women in Machine Learning workshop, collocated with NeurIPS, 2019.
- **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

Cornell University Artificial Intelligence (CUAI)   August 2018 - Present
Undergraduate Researcher   *Ithaca, NY*

- **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   May 2018 - May 2019
Undergraduate Research Assistant   *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

LinkedIn, Hire AI team   May 2019 - August 2019
Machine Learning and Relevance Engineer Intern   *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)   August 2019 - Dec 2019
Undergraduate Teaching Assistant   *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.

Introduction to Analysis of Algorithms (CS 4820)   Jan 2019 - May 2019
Undergraduate Teaching Assistant   *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)   August 2018 - Dec 2018
Undergraduate Teaching Assistant   *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)   Jan 2018 - May 2018
Undergraduate Teaching Assistant   *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)   August 2018 - Present
Research Member & Co-President   *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 Feb 2018 - Dec 2019
Intelligent System Team co-Lead 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 April 2018 - Present
Academic Officer Ithaca, NY

- 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

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