

Jiacheng (Gary) Liu

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EDUCATION

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN (UIUC) Urbana, IL, USA
B.S. in Computer Science; Minor in Physics; GPA 3.97/4.0 2016.08 - 2019.12
James Scholar; Dean's List: 2016 Fall, 2017 Spring, 2017 Fall, 2018 Spring, 2018 Fall, 2019 Spring
Teaching: CS 498-VR Virtual Reality, Course Assistant, 2018.01-2018.05

INDUSTRY EXPERIENCE

Facebook Software Engineer 2020.02 - Present
Design core, backend software components, and code using primarily C/C++, Java, and PHP
Interface with other teams to incorporate their innovations and vice versa
Conduct Design and code reviews, and analyze and improve efficiency, scalability, and stability of various system resources

Oculus, Facebook Software Engineering Intern 2019.05 - 2019.08
Optimized graphics pipeline in Oculus Quest
Built internal tools supporting better evaluation of graphics quality
Focused on visual fidelity and latency for better immersion

Exegy Software Engineering Intern 2017.05 - 2017.08
Conducted profile-guided optimization (PGO) on the core software of Exegy
Achieved significant reduction on latency of market data feeds normalization and transformation
Integrated automated PGO workflow into build system
Gained proficiency in OOP and template programming in C++, and experience with GCC and Linux

PROJECTS

Machine Learning Lab - a collection of experimental ideas and preliminary implementations

RhymeNet: substituting rhymes in Chinese Song poems (Python & PyTorch) | [Code](#) 2018.08

DFTnet: efficiently training large neural networks (Python & PyTorch) | [Report](#) | [Code](#) 2018.05

BiReality - a virtual reality world infrastructure 2015.09 - Present
A universal virtual space platform that simulates, complements and extends reality. Present projections of real-world landscapes, architecture and objects with corresponding functionality, while allowing pure creations. Individual users can enjoy living in residence, conduct activities, and lead another life. Public services (libraries) and commercial activities (shops, sport events, concerts) can be performed in virtual space. Aims at offering spatial accessibility and integrating VR platforms.
Designed and developed infrastructure for universal virtual world platform
Implemented client with C#, Unity; console with Vue.js, JavaScript, Java
Constructed a demo world with common utility venues (e.g. libraries, galleries, furniture stores)

Experience Illinois - a VR experience of UIUC campus (CS 498 team project) | [Code](#) 2017.10 - 2017.12
A virtual tour of UIUC featuring panoramic view of various campus locations, group tours, interactive activities.

Developed multiuser game Frisbee-on-the-quad; applied depth correction (Oculus, Unity, C#, Photon networking)
 Developed book reading experience in library scene; researched on high-quality text displaying in VR
 Endorsed by Prof. Steve LaValle and Anna Yershova

RESEARCH EXPERIENCE

- Phrase Grounding (with Prof. Julia Hockenmaier, Computer Science, UIUC)** 2018.06 - 2019.12
 Undergraduate Research Assistant | [Paper](#) | [Code](#)
 Approached the phrase grounding problem as a sequence labeling task
 Extended standard CRFs to Soft-Label CRFs that adapt to the task by solving gold label multiplicity
 Developed mathematical formulation and learning algorithm for Soft-Label Chain CRFs
 Applied Soft-Label Chain CRFs to phrase grounding and improved state-of-the-art on Flickr30k Entities
- Depth Correction in VR (with Prof. Anna Yershova, Computer Science, UIUC)** 2017.10 - 2018.05
 Independent Study | [Report](#) | [Code](#)
 Studied the problem that virtual objects are not perceived as correctly located in 360 video environment
 Derived 3D geometric transformation that provides corrected monocular depth cue in consensus with background
- Adiabatic Quantum Computing (with Prof. Bryan Clark, Physics, UIUC)** 2017.08 - 2017.12
 Independent Study | [Report](#) | [Code](#)
 Analyzed the asymptotic time complexity of adiabatic quantum algorithms on selected NP-Complete problems (e.g. max clique, max vertex independent set, min vertex cover set)
 Learned basics of adiabatic quantum computing (AQC); implemented numerical simulations of AQC and projector Monte Carlo on classical architecture

PUBLICATIONS

- Jiacheng Liu** and Julia Hockenmaier. 2019. *Phrase Grounding by Soft-Label Chain Conditional Random Field*. In Proceedings of the 2019 Conference on Empirical Methods in Natural Language Processing and 9th International Joint Conference on Natural Language Processing (EMNLP-IJCNLP 2019). <https://www.aclweb.org/anthology/D19-1515> (Long Paper, Oral)
- Zihan Wang, Jingbo Shang, Liyuan Liu, Lihao Lu, **Jiacheng Liu** and Jiawei Han. 2019. *CrossWeigh: Training Named Entity Tagger from Imperfect Annotations*. In Proceedings of the 2019 Conference on Empirical Methods in Natural Language Processing and 9th International Joint Conference on Natural Language Processing (EMNLP-IJCNLP 2019). <https://www.aclweb.org/anthology/D19-1519> (Long Paper, Oral)

AWARDS

2020 CRA Outstanding Undergraduate Researcher Award	Honorable Mention	2019.12
Correlation One Terminal Live: UIUC	Team 1st Place	2019.09
John R. Pasta Outstanding Undergraduate Award		2019.04
ACM-ICPC World Finals	Team 62nd Place	2019.04
ACM-ICPC Neural Network Challenge	Team 2nd Place	2019.04
ACM-ICPC Mid-Central USA Regional Programming Contest	Team 1st Place	2018.11
UI Undergraduate Math Contest	1st Place	2018.02
ACM-ICPC Mid-Central USA Regional Programming Contest	Team 3rd Place	2017.11
ACM-ICPC Mid-Central USA Regional Programming Contest	Team 4th Place	2016.11