Jiacheng (Gary) Liu

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EDUCATION

UNIVERSITY OF WASHINGTON   Seattle, WA, USA

Ph.D. in Computer Science and Engineering. Research area: natural language processing   2021.03 - Present

Advisors: Yejin Choi, Hannaneh Hajishirzi

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

Bronze Tablet (3%); Degree with Highest Honors; James Scholar; Dean's List: Fa'16 through Sp'19

Teaching: CS 498-VR Virtual Reality, Course Assistant, 2018.01-2018.05

PUBLICATIONS

Generated Knowledge Prompting for Commonsense Reasoning

Jiacheng Liu, Alisa Liu, Ximing Lu, Sean Welleck, Peter West, Ronan Le Bras, Yejin Choi, Hannaneh Hajishirzi

ACL 2022 (Main Conference)

Towards Grounded Natural Language Proof Generation

Sean Welleck, **Jiacheng Liu**, Jesse Michael Han, Yejin Choi

NeurIPS 2021 MATHAI4ED Workshop (Contributed Talk)

NaturalProofs: Mathematics meets Natural Language

Sean Welleck, **Jiacheng Liu**, Ronan Le Bras, Hannaneh Hajishirzi, Yejin Choi, Kyunghyun Cho

AITP 2021 (Contributed Talk)

NaturalProofs: Mathematical Theorem Proving in Natural Language

Sean Welleck, **Jiacheng Liu**, Ronan Le Bras, Hannaneh Hajishirzi, Yejin Choi, Kyunghyun Cho

NeurIPS 2021 Datasets and Benchmarks Track (Oral, 1%)

Phrase Grounding by Soft-Label Chain Conditional Random Field

Jiacheng Liu and Julia Hockenmaier

EMNLP-IJCNLP 2019 (Oral)

CrossWeigh: Training Named Entity Tagger from Imperfect Annotations

Zihan Wang, Jingbo Shang, Liyuan Liu, Lihao Lu, **Jiacheng Liu**, and Jiawei Han

EMNLP-IJCNLP 2019 (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

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

INDUSTRY EXPERIENCE

Oculus, Facebook   Software Engineer   2020.02 - 2021.03

Worked with the natural language generation (NLG) team in Facebook Assistant

Applied large pretrained Transformer model to the graph-to-text module of automated question answering

Designed and implemented a modularized framework for rule-based response planning in the voice assistant

Managed the response templates, maintained the NLG system, and developed new software features (in C++)

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

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)