Junchen Zhao

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I'm an undergraduate student tripe majoring in B.S. Data Science, B.S. Business Information Management, and B.S in Pure Mathematics at the University of California Irvine. I did the Master of Engineering Computing exchange study at Imperial College London during my academic year 2019-2020. I like to keep learning, challenging myself and working in a competitive environment.

Education Experience

2017-06 - present

University of California, Irvine (UCI)

B.S. Data Science
B.S. Business Information Management
B.S in Pure Mathematics

2019-09 - 2020-06

Imperial College London (MEng Computing Exchange specializing in Machine Learning and Artificial Intelligence)

One Academic year MEng exchange in the Computing department at Imperial College London, specializing in Machine Learning and Artificial Intelligence

2014-09 - 2017-06

The Gunston School(High School)

Publication

2018-10 [2019DATE] **Junchen Zhao***, Ian.G.Harris. Subtree Identification for generating assertions Language Descriptions. **Accepted by conference Design Automation and Test in Europe.**

2020-05 [2020ASE] **Junchen Zhao***, Ian.G.Harris. Automatic Code Generation from Natural Language Descriptions Using Neural Machine Translation with BERT. **Submitted to conference Automatic Software Engineering.**

Research and Industrial Experience

2020-06 - present

Computer Science Part-time Research Programmer

University of College London Queen Square Institute of Neurology Max Planck, University of College London Centre for Computational Psychiatry and Age
Led by Dr Dominik Bach.
I worked as Part-time research Programmer in the Max Planck UCL Centre for Computational Psychiatry and Aging Research for programming and software development in a research project led by Dr Dominik Bach.
The software is publicly distributed on GitHub. I will further contribute to the maintenance of a data repository used for development purposes, and work on a code base for data curation and analysis pipelines.

2020-05 - 2020-09

Computer Science Summer Research Internship

Imperial College London, Computing Department, NLP Group
Under supervision of Professor Lucia Specia.
Evaluating Visual Fidelity of Image Description Based on Fluency-based Word Mover's Distance
Worked with Professor Lucia Specia at Imperial College, we are proposing to build a generated image description evaluation system by applying Fluency-based word mover's distance, and update the previous work of the fluency- based word mover's distance from word2vec to contextualized word embedding, such as BERT, so as to improving the image description evaluation system accuracy result efficiently.

2019-05 - 2020-05

Computer Science Research Assistant

University of California, Irvine - Dept. of Information & Computer Science
Under supervision of Professor Ian G Harris.
Intelligent Chatbot system for translating Natural Language to Code:
Worked with a partner and professor Ian G Harris to write a chatbot system for translating the natural language instruction to python code by applying Supervised Learning, Unsupervised Learning and the OPEN-NMT with BERT developed by Harvard NLP. We have submitted our paper to the conference ***Automatic Software Engineering(conferenceASE)***

2018-11 - 2019-03

Economic Research Assistant

University of California, Irvine - Dept. of Social Science
Under supervision of Professor Amihai Glazer.

Undergraduate Research focusing on social computing and Markets prediction:
Conducted research involving analyzing data with the firms which are affected by the change of government policies and used open-sourced data mining algorithm to generate the statistically significant pattern.

2018-06 - 2018-09

Education Research Summer internship

University of California, Irvine - Digital Learning Lab
Under supervision of Professor Mark Warschauer.
Undergraduate Research focusing on computer education and Intelligent learning:
Conducted research based on students who take online Engineering course at UC Irvine, we used and analyzed the data collected from those students by supervised learning method so that we make decisions that whether the online courses needed to be improved and actually benefited the students who took this online course.

2017-08 - 2018-06

Computer Science Research Assistant

University of California, Irvine - Dept. of Information & Computer Science
Under supervision of Professor Ian G. Harris.
Undergraduate Research focusing on analyzing structure of sentences:
Conducted research involving understanding the relationship between natural language and machine language. Using Stanford Core NLP to normalize dates, time, numeric quantities and markup the structure of sentences in terms of phrases and syntactic dependencies. Published Paper Subtree Identification for generating assertions Language Descriptions on DATE(Design Automation and Test in Europe).

2017-02 - 2017-05

Web Developer Internship

BookMooch
Developing Online book sharing and trading website:
We developed an online book sharing and trading website which was designed for those who need convenience of sharing and trading used books.
As a part of the team, I designed the format and Graphic User Interface of this website. Built website based on HTML/CSS.

Selected Projects

2020-06

[University of College London Centre for Computational Psychiatry and Age] **I worked as Part-time research Programmer in the Max Planck UCL Centre for Computational Psychiatry and Aging Research for programming and software development in a research project led by Dr Dominik Bach:** In the context of this project, I'm currently participating in development and maintenance of a Matlab-based toolbox for model-based analysis of biosignals (bachlab.org/pspm). The software includes signal processing modules, biophysical models, statistical model inversion, and plotting and reporting functions. The software is publicly distributed on GitHub. I will further contribute to the maintenance of a data repository used for development purposes, and work on a code base for data curation and analysis pipelines.

2020-05

[Imperial College London NLP Group] **Computer Science Summer Research Project - Evaluating Visual Fidelity of Image Description Based on Fluency-based Word Mover's Distance:** Worked with Professor Lucia Specia at Imperial College, we are proposing to build a generated image description evaluation system by applying Fluency-based word mover's distance, and update the previous work of the fluency- based word mover's distance from word2vec to contextualized word embedding, such as BERT, so as to improving the image description evaluation system accuracy result efficiently.

2019-10

[Imperial College London] Computer Science Master of Engineering Individual Project - Safety-Aware Multi- Agent Apprenticeship Learning: Working with Professor Belardinelli, Francesco at Imperial College through one academic year 2019-2020 to extract safe reward functions from expert behaviors in multi-agent Apprenticeship Learning systems, which is a type of multiple-agent inverse reinforcement learning system that we learn from expert demonstration where reward function of the Markov Game is unknown to the learning agents. Our project is based on the paper "Safety-Aware Apprenticeship Learning" and "Multi-Agent Inverse Reinforcement Learning". More details about my project, please go to my [Github Repository].

2019-09

[University of California, Irvine] Computer Science Research Project: Natural Language to Python Translating Chatbot: Worked with a partner and professor Ian G Harris to write a chatbot for translating the natural language instruction to python code by applying the OPEN-NMT with BERT, Supervised Learning, Unsupervised Learning. We have submitted our paper to the ***Automatic Software Engineering conference(ASE)***.

2018-06

[University of California, Irvine] Education Research Project - Online Education Course Evaluation System: Worked with a partner to write an online course evaluation system for the digital learning lab at UC Irvine. We designed a system to automatically prompt students who are taking online courses at UC Irvine once they finished their online classes to take self-assessment for ensuring they have actually learned the content in the class successfully.

2018-03

[University of California, Irvine] Computer Science Research Project - Assertions Generator based on Natural Language Descriptions: Worked with professor Harris to build an application for generating the system assertions based

on natural language input. I used the Stanford NLP to facilitate the project, improved the translation accuracy and we successfully published paper at the Conference ***Design Automation and Test In Europe(DATE).***

Research Interests

1. Artificial Intelligence: Natural Language Processing (Computational Linguistics), Reinforcement Learning, Deep Learning.

2. Social computing: Technology and policy.

3. Computer education: Intelligence Learning system.

Skills

Computing Skills: Python, C++, Java, SQL, Numpy, Pandas, Pytorch, R, Matlab, Keras, Sklearn

Intermediate

Stochastic Analysis: Stochastic Analysis, Stochastic Process, Guassian Process, Bayesian Optimization.

Intermediate

Numerical Algorithms: Computational optimization, Markov Decision Process, Markov Game.

Intermediate

Graduate-Level Course Selection

Imperial College London - **CO460 Deep Learning** [LINK]

Imperial College London - **CO490 Natural Language Processing** [LINK]

Imperial College London - **CO416 Machine Learning for Imaging** [LINK]

Imperial College London - **CO395 Introduction to Machine Learning** [LINK]

Imperial College London - **CO316 Computer Vision** [LINK]

Imperial College London - **CO424 Reinforcement Learning** [LINK]

Imperial College London - **CO496 Mathematics for Machine Learning** [LINK]

Leadership and Extracurricular Experience

2018-10 - present

University of California, Irvine

Chinese Students Leadership Society Board Member

1. I'm the board member of Chinese student leadership society(CSLS), which was founded in 2018.
2. My responsibility in CSLS is to organize the human resources in the club and holding meaningful events on campus.

2017-10 - 2018-02

University of California, Irvine

UCI New Venture Entrepreneurship Competition Team leader

Supervised by Professor Kevin Duane Bradford

1. Lead team to create online artist-job searching platform and successfully got into the final round competition at Paul Merage School of Business at UC Irvine.

2017-07 - 2017-08

University of California, Irvine

Summer Multicultural Leadership institute

1. Formulated a coalition to advocate for the Cross-Cultural Center against the stigma and social fears of interacting and seeking counseling in the campus.

Languages

Chinese — Native

English — Proficient

French — Intermdiate