

YULING GU

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PROFILE

I am a first-year Ph.D. student in the Electrical and Computer Engineering department at the University of Washington. I have worked on a number of natural language processing projects focusing on commonsense reasoning, information extraction and speech processing. Drawing on an extensive background in linguistics, psychology, and computer science, I combine machine learning techniques with cognitive science in my research.

EDUCATION

University of Washington, Seattle, WA, USA

September 2020 -

- Ph.D. in Electrical and Computer Engineering (Cumulative GPA: 4.0)
- Advisor: Prof. Mari Ostendorf

New York University, New York, NY, USA

August 2016 - May 2020

- Bachelor of Arts, *summa cum laude* (Cumulative GPA: 3.991)
- Double major: Computer Science with high honors, Language and Mind (Joint major in linguistics, psychology and philosophy); Minor: Mathematics
- Honors Thesis: "Towards detecting temporal relations implicitly conveyed in text"
Advisor: Prof. Ernest Davis
- Relevant Coursework: Machine Learning for Language Understanding, Introduction to Machine Learning, Artificial Intelligence, Natural Language Processing, Theory of Computation, Numerical Computing, Operating Systems, Basic Algorithms, Computer Systems Organization, Data Structures, Discrete Mathematics, Linear Algebra, Calculus 3, Probability & Statistics, Statistics for The Behavioral Sciences, Minds and Machines, Logic, Language and Mind, Perception, Cognition, Sound and Language, Grammatical Analysis, Introduction to Semantics, Neural Bases of Language

TECHNICAL SKILLS

Computer Languages	Python, Java, R, MATLAB, Unix, C
Software & Tools	LaTeX, SPSS Statistics, Praat(for analysis of speech)
Natural Languages	Bilingual in English and Mandarin Chinese, Conversational Shanghaiese

RESEARCH EXPERIENCE

Honors Thesis Project: Detecting temporal relations in text

Spring 2019 - Spring 2020

- Supervised by Prof. Ernest Davis at New York University. Using various classifiers, word and sentence representations, as well as linguistics theories to automatically detect temporal relations implicitly conveyed in texts (different levels: from single event description to multiple sentences); Analyzing the performance of Transformer-based state-of-the-art models in detecting implicit meaning from a psycholinguistics perspective; Culminated in honors thesis "Towards detecting temporal relations implicitly conveyed in text"

Can dependency parsing help event extraction in text?

Fall 2019 - Spring 2020

- Supervised by Prof. Ralph Grishman at New York University. Investigating the contribution of information from dependency parsing, Named Entity (NE) tagging, and Part Of Speech (POS) tagging in event extraction, beyond a baseline that uses pretrained BERT sentence representation

Integrated Customization Environment for Information Extraction (ICE) Summer 2019

- Supervised by Prof. Ralph Grishman at New York University. Experimenting with different classifiers, together with grammatical linguistics insights, to automatically distinguish prepositional phrases as adjuncts or arguments (achieved 88% accurate prediction of the distinction using linguistics theories alone)

Termolator: A terminology extraction system (Open source tool) Summer 2018 - Fall 2018

- Supervised by Prof. Adam Meyers at New York University. Refining distributional metrics in the English Termolator; Further development of the Chinese Termolator; Integrated developments over the past 5 years to merge the Chinese and English Termolator as one unified system (my contributions: <https://github.com/yulinggu-cs/ChineseTermolator2020>, integrated to full system on July 2020)

Independent study project: Commonsense Reasoning Summer 2018

- Supervised by Prof. Ernest Davis at New York University. Looking at English-Chinese Machine Translation failures; Designing Winograd schemas and compiling pronoun disambiguation problems; Toward Annotating Commonsense Inferences in Text (TACIT) annotation

Research intern: Human Language Technology Group

Institute for Infocomm Research, A*STAR, Singapore, Singapore Winter 2014 - Present

- Characterizing Singaporean, American, and British English acoustic and pronunciation patterns in children's speech using unsupervised clustering (supervised by Dr. Nancy F. Chen); Chinese tone perception in Singaporean and native Chinese Mandarin speakers; Investigating tone in whispered Mandarin (jointly supervised by Dr. Boon Pang Lim and Dr. Nancy F. Chen)

WORK EXPERIENCE

New York University (NYU) Spring 2019, Fall 2019

- Grader for Artificial Intelligence course at Courant Institute of Mathematical Sciences (CIMS) under Prof. Ernest Davis. (Fall 2019)
- Grader for Basic Algorithms course at Courant Institute of Mathematical Sciences (CIMS) under Prof. Victor Shoup. (Spring 2019)

PUBLICATIONS

Published Papers:

Yuling Gu and Nancy F. Chen (2020). "Characterization of Singaporean Children's English: Comparisons to American and British Counterparts using Archetypal Analysis". *Proceedings of Interspeech 2020*. Presented at Interspeech 2020, Shanghai, China (virtual).

Yuling Gu and Nancy F. Chen (2019). "Acoustic Characterization of Singaporean Children's English: Comparisons to American and British Counterparts". *Widening NLP workshop 2019*. Poster presented at WiNLP workshop at ACL 2019, Florence, Italy.

Yuling Gu, Boon Pang Lim and Nancy F. Chen (2016). "Perception of tone in whispered Mandarin sentences: the case for Singapore Mandarin". *Proceedings of Interspeech 2016*. Poster presented at Interspeech 2016, San Francisco, CA, USA.

Published Abstracts:

Yuling Gu and Nancy F. Chen (2019). "Large-scale acoustic characterization of mid-low vowels across American, British, and Singaporean children". *The Journal of Acoustical Society of America, Volume*

146, Issue 4. Poster presented at 178th Meeting of the Acoustical Society of America in San Diego, CA, USA.

Yuling Gu and Nancy F. Chen (2019). “Acoustic characterization of Singaporean children’s English with American and British counterparts: A case study on approximants”. *The Journal of Acoustical Society of America*, Volume 146, Issue 4. Poster presented at 178th Meeting of the Acoustical Society of America in San Diego, CA, USA.

In preparation:

Yuling Gu and Nancy F. Chen. Large-Scale Acoustic Characterization of Singaporean Children’s English: Comparisons to American and British Counterparts using Archetypal Analysis (in preparation for journal submission)

Yuling Gu. Investigating BERT-like models’ knowledge of hidden meanings (in preparation for journal submission)

CONFERENCES

Interspeech 2020, Shanghai, China. (Virtual conference)

178th Meeting of the Acoustical Society of America in San Diego, California. (ASA travel grant, NYU Dean’s Undergraduate Research Fund conference grant)

Represented NYU at 2019 Grace Hopper Celebration of Women in Computing in Orlando, FL, USA

ACL 2019, Florence, Italy. (WiNLP travel grant, NYU Dean’s Undergraduate Research Fund conference grant)

Interspeech 2016, San Francisco, CA, USA. (ISCA travel grant)

AWARDS/HONORS

University of Washington

The Graduate School Top Scholar Research Assistantship Award (first year of Ph.D.)

New York University

Phi Beta Kappa Honor Society (2020)

Faculty Memorial Award (Dean’s Award Spring 2020)

Computer Science Prize for Academic Excellence in the Honors Program (Dean’s Award Spring 2020)

University Honors Scholar (Spring 2020)

Four time recipient of Dean’s Undergraduate Research Fund (Spring 2018 Individual Research Grant, Spring 2019 Individual Research Grant & 2 Conference Grants)

Bernice Nachman Marlowe Scholarship (Fall 2018 – Spring 2020)

Steffi Berne Scholarship (Fall 2018 – Spring 2020)

Dean’s List for Academic Year (all 4 academic years)

Presidential Honors Scholars (Fall 2017 – Spring 2020)

Women In Science (WINS) Scholarship (Fall 2017 – Spring 2020)

External Grants

Acoustical Society of America travel grant (for 178th Meeting)

Widening NLP workshop at ACL travel grant (for ACL 2019)

ISCA travel grant (for Interspeech 2016)

EXTRA-CURRICULAR ACTIVITIES

New York University

NYU CAS alumni-student debate. The Motion: “The Benefits of the Development of Artificial Intelligence Outweigh the Harms.” (October 26, 2019)

Women in Science visibility committee: liaison (Fall 2017 – Spring 2020)

Presidential Honors Scholars Program (Fall 2017 – Spring 2020)

League of Linguistics interest group (Fall 2017 – Spring 2020)

Dean’s Honors Service Corps (Fall 2017 – Spring 2020)

Minority And Philosophy chapter (student organized interest group) (Spring 2017 – Spring 2020)