Jingcheng (Frank Niu)

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RESEARCH INTERESTS

Computational linguistics, natural language processing and machine learning: mechanistic interpretability, language modelling, temporal information extraction.

EDUCATION

University of Toronto, Ph.D. Student in Computer Science. June 2020 — Present
Advisor: Gerald Penn.

University of Toronto, Master of Science in Computer Science. Sept 2018 — June 2020
Advisor: Gerald Penn.

University of Toronto, Bachelor of Science in Computer Science. Sept 2014 — July 2018

EMPLOYMENT

Public Health Agency of Canada 2020 — Present
Research Scientist Toronto, Canada

Vector Institute 2023 — Present
Faculty Affiliate Researcher Toronto, Canada

iNAGO Corporation 2017 — 2018
Research Intern Toronto, Canada

IBM Canada 2017
Software Engineering Intern Markham, Canada

TEACHING EXPERIENCE

Head Teaching Assistant at the University of Toronto.

- CSC485/2501 Introduction to Computational Linguistics. Fall 2023
- CSC401/2511 Natural Language Computing. Winter 2024

Teaching Assistant at the University of Toronto.

- CSC485/2501 Introduction to Computational Linguistics. Fall 2019, 2020, 2021, 2022
- CSC401/2511 Natural Language Computing. Winter 2021, 2022, 2023
- CSC263: Data Structures and Analysis. Winter 2017, 2018, 2019, 2020
- CSC236: Introduction to the Theory of Computation. Fall 2015, Summer 2021
- CSC148: Introduction to Computer Science. Fall 2018, Summer 2019

HONOURS AND AWARDS

- Federal Student Work Experience Program (FSWEP). 2020 — 2024
- Vector Research Faculty Affiliate Award. 2023
- PhD Conference Travel Award. 2022
- Vector Postgraduate Affiliate Award. 2021 — 2022
- St. Michael's College Silver Medal. 2018
- Dean's List - University of Toronto. 2014 — 2017

PUBLICATIONS

Refereed Conference Publications

1. What does the Knowledge Neuron Thesis Have to do with Knowledge?
   Jingcheng Niu, Andrew Liu, Zining Zhu, Gerald Penn.
   International Conference on Learning Representations (**ICLR**), 2024, (Spotlight).

2. Chinese Quantifier Scope, Concord, and Lexical Resource Semantics.
   Jingcheng Niu, Xinyu Kang, Pascal Hohmann, Gerald Penn.
   International Conference on Head-Driven Phrase Structure Grammar (**HPSG**), 2022.

3. Does BERT Rediscover a Classical NLP Pipeline?
   Jingcheng Niu, Wenjie Lu, Gerald Penn.
   International Conference on Computational Linguistics (**COLING**), 2022, (Oral).

4. Temporal Histories of Epidemic Events (THEE): A Case Study in Temporal Annotation for Public Health.
   Jingcheng Niu, Erin E. Rees, Victoria Ng, Gerald Penn.
   Language Resources and Evaluation Conference (**LREC**), 2020.

5. Rationally Reappraising ATIS-based Dialogue Systems.
   Jingcheng Niu, Gerald Penn.
   Annual Meeting of the Association for Computational Linguistics, (**ACL**), 2019.

Journal Publications

6. A call for an ethical framework when using social media data for artificial intelligence applications in public health research.
   Jean-Philippe Gilbert, Victoria Ng, **Jingcheng Niu**, Erin E. Rees.
   Canada Communicable Disease Report, (**CCDR**), 2020.

7. Application of natural language processing algorithms for extracting information from news articles in event-based surveillance.
   Victoria Ng, Erin E. Rees, **Jingcheng Niu**, Abdelhamid Zaghool, Homeira Ghiasbeglou, Adrian Verster.
   Canada Communicable Disease Report, (**CCDR**), 2020.

Refereed Workshop Publications

8. Discourse Information for Document-Level Temporal Dependency Parsing.
   Jingcheng Niu, Victoria Ng, Erin E. Rees, Simon de Montigny, Gerald Penn.
   Workshop on Computational Approaches to Discourse, (**ACL CODI**), 2023.

9. Using Roark-Hollingshead Distance to Probe BERT's Syntactic Competence.
   Jingcheng Niu, Wenjie Lu, Eric Corlett, Gerald Penn.
   Workshop on Analyzing and Interpreting Neural Networks for NLP, (**BlackboxNLP EMNLP**), 2022.

10. Statistically Evaluating Social Media Sentiment Trends towards COVID-19 Non-Pharmaceutical Interventions with Event Studies.
    Jingcheng Niu, Erin E. Rees, Victoria Ng, Gerald Penn.
    Social Media Mining for Health Workshop and Shared Task, (**SMM4H NAACL**), 2021.

11. Machine Learning Identification of Self-reported COVID-19 Symptoms from Tweets in Canada.
    Jean-Philippe Gilbert, **Jingcheng Niu**, Simon de Montigny, Victoria Ng, Erin E. Rees.
    International Workshop on Health Intelligence, (**W3PHAI AAAI**), 2021.

12. Grammaticality and Language Modelling.
    Jingcheng Niu, Gerald Penn.
    Workshop on Evaluation and Comparison of NLP Systems, (**Eval4NLP EMNLP**), 2020.

Refereed Industry Track Conference Publications

13. Bringing the State-of-the-Art to Customers: A Neural Agent Assistant Framework for Customer Service Support.
    Stephen Obadinma, Faiza Khan Khattak, Shirley Wang, Tania Sidhom, Elaine Lau, Sean Robertson, **Jingcheng Niu**, Winnie Au, Alif Munim, Karthik Raja K. Bhaskar, Bencheng Wei, Iris Ren, Waqar Muhammad, Erin Li, Bukola Ishola, Michael Wang, Griffin Tanner, Yu-Jia Shiah, Sean X. Zhang, Kwesi P. Apponsah, Kanishk Patel, Jaswinder Narain, Deval Pandya, Xiaodan Zhu, Frank Rudzicz, Elham Dolatabadi.
    Conference on Empirical Methods in Natural Language Processing: Industry Track (**EMNLP Industry Track**).

Preprints & Work Under Review

14. A Rigorous Annotation Framework for Event Temporal Relations Based on Temporal Anaphora Theory.
    Jingcheng Niu, Victoria Ng, Simon de Montigny, Gerald Penn.
    Under Review, 2023.

15. ConTempo: Temporally Contrastive Learning for Temporal Relation Extraction.
    Jingcheng Niu, Saifei Liao, Victoria Ng, Simon de Montigny, Gerald Penn.
    Under Review, 2023.

16. GLOOCoSE: Contrastive Sentence Embedding with Layer- and Token-wise Attention Pooling.
    Jingcheng Niu, Saifei Liao, Ruiyu Wang, Wenjie Lu, Gerald Penn.
    Under Review, 2023.

SERVICE

Reviewer for Conferences and Journals:
    EACL (2023), EMNLP (2022, 2023), ACL (2022, 2023), ACL Rolling Review (2024), IJCNLP (2023), Fever Workshop (2023), CODI Workshop (2024).

INVITED TALKS

1. Syntax and Language Modelling.
   ACL Student Research Seminar, University of Toronto. July 2023.

2. Does BERT Rediscover the Classical NLP Pipeline?
   Vector Research Symposium. March 2023.

3. Chinese Quantifier Scope, Concord, and Lexical Resource Semantics.
   Linguistics Colloquium, Goethe-Universität Frankfurt. October 2022.

4. Understanding Public Sentiment about COVID-19 Non-Pharmaceutical Interventions through Event Studies.
   Vector Research Symposium. February 2021.

RESEARCH MENTORSHIPS

- Wenjie Lu, M.Sc. student at the University of Toronto.
- Andrew Liu, Undergraduate student at the University of Waterloo.
- Saifei Liao, Undergraduate student at the University of Toronto.
- Ruiyu Wang, Undergraduate student at the University of Toronto.