Aaron Chun Hei LO

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Summary

- Over 6 years of experience in NLP with interdisciplinary knowledge of linguistics and machine learning (ML)
- Studied a broad coverage of areas, from grammar-based parsing and dialogue system to distributional semantics
- Demonstrated abilities in publishing papers in top conferences as well as developing practical applications

Education

Ph.D. in Systems Engineering and Engineering Management Aug 2019–Present (expected: Jan 2024)
The Chinese University of Hong Kong (CUHK)
Thesis: *Learning Semantics from Meaning Representations: From Distributional and Graph-Grammatical Perspectives*

B.Sc. (Hons) with First Class Honors in Computer Science Sept 2015–July 2019
The Chinese University of Hong Kong

- **Dean's List**: Awarded for academic excellence in the Faculty of Engineering 2016, 2017, 2018, 2019
- **Master's List**: Awarded to the top student of each major of each class in Wu Yee Sun College 2017, 2018, 2019
- **ELITE Stream Student Scholarship**: To recognize excellence in advanced-level ELITE courses 2017, 2019
- **Computer Science Scholarship**: Awarded to top students admitted to the computer science program 2016

R&D Experience

Truth-Conditional Word Representations via Functional Distributional Semantics (FDS) 2021–2023

- Enhanced scalability of FDS for complex sentence structures with improved performances on semantic tasks
- Developed a variational autoencoder from scratch using PyTorch with distributed data parallelism
- Resulted in a paper at **SEM 2023*[4], and was invited to present at the 19th DELPH-IN Summit[4][5]

Text Generation via Semantic Graph Parsing 2019–2021

- Adapted graph parsing to efficiently reconstruct syntactic derivations from semantic graphs
- Outperformed a neural seq-to-seq method on surface realization under low-resource and out-of-domain settings
- Published a paper in *ACL 2023*[3], and presented at the Foundations of Language Processing of Umeå University

Task-Oriented Dialogue System with Unstructured Knowledge Access 2021

- Led a subteam of the 11-people CUHK team in participating in the DSTC9 shared task
- Developed a ranked retrieval system[2] for answering users' queries using Huggingface and PyTorch
- Made it to the finals and ranked 12 out of the 24 participating teams

CV–JD Recommendation System 2019

- Wrote a web crawler to scrape over 40,000 publicly available CVs and 20,000 job descriptions (JDs)
- Devised a CV–JD matching algorithm using doc2vec and Latent Dirichlet Allocation on the scrapped data

Work Experience

Junior Research Assistant July 2019
Department of Systems Engineering and Engineering Management, CUHK

- Conducted collaborative research on cross-framework meaning representations parsing and published a paper

Software Engineer Intern June 2018–Aug 2018
Set Sail Software

- Collaborated with digital marketing agencies in developing chatbots for multiple clients tailored to their needs
- Created tools for automating performance analyses of chatbots

Additional Experience

Teaching Assistant, Faculty of Engineering, CUHK

- CSCI2100: Data Structures 2020–2023
- SEEM3550: Fundamentals in Information Systems 2021–2023

Resident Tutor, Wen Lin Tang, Chung Chi College, CUHK 2021–2023

- Provided pastoral care to undergraduate residents and served as an intermediary between them and the warden

Core Skills

Natural Languages Cantonese (*native*), English (*proficient*), Mandarin (*proficient*)

Programming Languages Python, C

ML Frameworks PyTorch, Tensorflow, scikit-learn

NLP Libraries PyDelphin, NLTK, WordNet, Hugging Face

Research Areas Computational Semantics, Meaning Representations

Publications and Preprints

[5] Chun Hei Lo and Guy Emerson. 2023. Distributional Inclusion Hypothesis and Quantifications: Probing Hypernymy in Functional Distributional Semantics. arXiv:2309.08325

[4] Chun Hei Lo, Hong Cheng, Wai Lam, and Guy Emerson. 2023. Functional Distributional Semantics at Scale. In *Proceedings of the 12th Joint Conference on Lexical and Computational Semantics (*SEM 2023)*, pages 423–436, Toronto, Canada

[3] Chun Hei Lo, Wai Lam, and Hong Cheng. 2022. Semantic Composition with PSHRG for Derivation Tree Reconstruction from Graph-Based Meaning Representations. In *Proceedings of the 60th Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers)*, pages 5425–5439, Dublin, Ireland

[2] Mudit Chaudhary, Borislav Dzodzo, Sida Huang, Chun Hei Lo, Mingzhi Lyu, Lun Yiu Nie, Jinbo Xing, Tianhua Zhang, Xiaoying Zhang, Jingyan Zhou, Hong Cheng, Wai Lam, and Helen Meng. 2021. Unstructured Knowledge Access in Task-oriented Dialog Modeling using Language Inference, Knowledge Retrieval and Knowledge-Integrative Response Generation. arXiv:2101.06066

[1] Sunny Lai, Chun Hei Lo, Kwong Sak Leung, and Yee Leung. 2019. CUHK at MRP 2019: Transition-Based Parser with Cross-Framework Variable-Arity Resolve Action. In *Proceedings of the Shared Task on Cross-Framework Meaning Representation Parsing at the 2019 Conference on Natural Language Learning*, pages 104–113, Hong Kong