

Ye Chenchen

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EDUCATION

Bachelor of Computing, Computer Science

Aug. 2018 – June 2022

National University of Singapore, Singapore

- **Specializations:** Artificial Intelligence; Multimedia Information Retrieval
- **CAP:** 4.71/5.00, 1st Class Honors (Highest Distinction)
- **Bachelor Dissertation:** “Revisiting Response Generation for Task-oriented Multimodal Dialogue”
Supervisor: Dr. Chua Tat Seng, KITHCT Chair Professor at School of Computing, National University of Singapore
Mentor: Dr. Liao Lizi, Assistant Professor at Singapore Management University

RESEARCH INTERESTS

My research interest covers **multimedia analysis, knowledge representation and reasoning**, and **conversation systems**. Specifically, I aim at developing models that can reason over heterogeneous/multimodal knowledge (e.g. text, image & knowledge graph) and generate appropriate responses and predictions for user requests.

Current work:

- Complex Event Forecasting with Heterogeneous/Multimodal Data
- Multimodal Conversational Search and Response Generation

PUBLICATIONS

2. Reflecting on Experiences for Response Generation.

Chenchen Ye, Lizi Liao, Suyu Liu, Tat-Seng Chua

In Proceedings of the 30th ACM International Conference on Multimedia (MM '22), October 2022.

1. Structured and Natural Responses Co-generation for Conversational Search.

Chenchen Ye, Lizi Liao, Fuli Feng, Wei Ji, Tat-Seng Chua

In Proceedings of the 45th International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR '22), July 2022. (Full paper accepted for oral presentation)

AWARDS & HONORS

Outstanding Undergraduate Researcher Prize (university-wide). NUS.

AY 2021 – 2022

Deans' List Awards (top 5% of the cohort). NUS, School of Computing.

AY 2019 – 2020, AY 2021 – 2022

Science & Technology Undergraduate Scholarship. NUS.

2018 – 2022

Senior Middle 2 Scholarship. Ministry of Education, Singapore.

2018 – 2022

RESEARCH EXPERIENCE

Research Assistant

Onboarding

NExT Research Center, National University of Singapore

- Study temporal graph learning method with heterogeneous/multimodal data for predicting future events.
- Investigate trustable computing to cover the key pillars of explainability, causality, and robustness of the models developed.

Undergraduate Student Researcher

May 2021 – June 2022

NExT Research Center, National University of Singapore

- Addressed a critical problem in conversational search systems in generating fluent and informative natural responses to the user while maintaining representative internal states such as dialogue acts for search optimization.
- Proposed and implemented a case-based reasoning model for task-oriented multimodal dialogues and enhanced the performance with contrastive learning for multi-modality retrieval and cross-copying from both contexts and similar cases for response rewrite.

TEACHING EXPERIENCE

Teaching Assistant

Jan. 2020 - May 2020

School of Computing, National University of Singapore

- CS2030 Programming Methodology II & CS2040 Data Structure and Algorithm

INDUSTRIAL EXPERIENCE

R&D Intern in NLP Team

June 2020 – Aug. 2020

YITU Technology, Singapore

- Investigated cutting-edged algorithms for Knowledge-based Question Answering (KBQA), especially for multi-constraints questions.
- Constructed a QA dataset that simulates the company's business with richer language expressions to enhance model generalizability.
- Implemented and optimized a BERT-based Relation Extraction model that increases the accuracy and recall of the QA system.

SELECTED COURSE PROJECTS

Towards Empathetic Music Generation System

Jan. 2021 – Apr. 2021

Researcher (Conceptualization, Implementation, Investigation, Writing)

Supervisor: Dr. Wang Ye, Associate Professor at School of Computing, National University of Singapore

- Proposed and developed an emotion-controllable automatic music generation system using a conditional variational autoencoder.
- Explored and trained different musical emotion classification models, including SVM and MLP, LSTM, and GPT-2 for evaluation.

Static Program Analyzer

Jan. 2021 – Apr. 2021

Software Engineer (C++)

- Developed a static program analyzer that grammatically parses input source code and executes users' queries.
- Implemented an efficient query evaluator for multi-constrained queries by filtering answer candidates in a depth-first manner.

Part-of-speech (POS) Tagging

Oct. 2020 – Nov. 2020

Python Programmer (PyTorch, NLP)

- Implemented a POS tagger that applied Deep Bi-directional LSTM to model the input word sequences.
- Enhanced the model performance by combining the word-level network with a character-level Convolutional Neural Network.

Deep Q-Learning Agent for Crossing Road

Oct. 2020 – Nov. 2020

Algorithm Programmer (Python, Reinforcement Learning)

- Implemented an AI agent using Deep Q-Learning (DQN) to handle large-scale non-deterministic planning problems, where an object needs to cross a busy multi-lane road with moving cars at different speeds.
- Improved the final accuracy by applying curriculum training and reward shaping to the convolutional DQN model.

K-Puzzle & Sudoku Completion

Feb. 2020 - May 2020

Algorithm Programmer (Python)

- Implemented A* Graph Search Algorithm with different admissible and consistent heuristics for k-dimensional puzzles.
- Applied Constraint Satisfaction Problem (CSP) with backtracking to solve Sudoku puzzles, and investigated the efficiency of different heuristics, such as various variable & value selecting and domain reducing heuristics.

FitHelper: Chatting Bot & Task Management

Jan. 2020 - May 2020

Software Developer (Java)

- Factored and implemented the main backend skeleton for this desktop chatting-and-recording application.
- Developed interactive functions related to user profile and weight tracking and designed corresponding graphic user interfaces (GUI).

SKILLS, CERTIFICATIONS & OTHERS

- **Programming Languages:** Python, Java, C++, C, SQL (MySQL, PostgreSQL), R, Matlab
- **Software & Other IT Skills:** PyTorch, TensorFlow, Tableau, Kaldi, Git, Linux
- **Languages:** English (Proficient, TOEFL iBT Score: 112/120), Chinese (Native)
- **Co-curricular Activities:** Activity Department in NUS Chinese Society, Data Science Workshop Team in NUS Statistics Society