

Silin Gao

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EDUCATION

École Polytechnique Fédérale de Lausanne (EPFL), School of Computer & Communication Sciences	Lausanne, Switzerland
Doctor of Philosophy (PhD) in Computer and Communication Sciences	Sep 2021 - Present
Tsinghua University, Department of Computer Science and Technology	Beijing, China
Research Assistant (RA) in Artificial Intelligence	Sep 2020 - Jun 2021
Tsinghua University, Department of Electronic Engineering	Beijing, China
Bachelors of Engineering (BE) in Electronic Information Science and Technology	Aug 2016 - Jun 2020
• GPA: 3.88/4.0 Rankings: 8/262	

RESEARCH EXPERIENCE

Bridging Unstructured Textual Data with Structured Knowledge in NLP Applications	Sep 2021 - Present
Advisor: Antoine Bosselut, Natural Language Processing (NLP) Lab, EPFL	Lausanne, Switzerland
<ul style="list-style-type: none">• Developing more reliable structured knowledge bases for the NLP applications where systems lack access to well-organized knowledge related to their processed unstructured textual data.• Developing better knowledge linking techniques for NLP systems to more effectively leverage structured knowledge.• Applying developed data resources and techniques to real-world NLP application scenarios.	
Semi-Structured Knowledge Management for End-to-End Task-Oriented Dialog Modeling	Sep 2020 - Feb 2022
Advisor: Minlie Huang, Conversational Artificial Intelligence (CoAI) Lab, Tsinghua University	Beijing, China
<ul style="list-style-type: none">• Defined a task of modeling task-oriented dialog with management of semi-structured knowledge, and developed a modified version of MultiWOZ dataset (Mod-MultiWOZ) facing the defined task.• Proposed several end-to-end task-oriented dialog systems to address the defined task, which use an extended belief tracking to manage semi-structured knowledge and achieve strong performances on the Mod-MultiWOZ dataset.• Published two academic papers as 1st author, which are accepted to ACL 2021 findings and TASLP, respectively.	
Paraphrase Augmented Task-Oriented Dialog Generation	Jun 2019 - Jul 2020
Advisor: Zhou Yu, Department of Computer Science, University of California, Davis	Davis, California, USA
<ul style="list-style-type: none">• Proposed a method of excavating potential dialog function of user utterances in task-oriented dialog modeling, which is used to construct dialog paraphrases for data augmentation.• Proposed a new framework of paraphrase augmented task-oriented dialog generation, which improves the task completion ability of state-of-the-art dialog models TSCP and DAMD on CamRest676 and MultiWOZ datasets, respectively.• Published an academic paper as 1st author, which is accepted to ACL 2020.	
Mixed-Feature Trans-dimensional Random Field Language Models for Speech Recognition	Mar 2019 - May 2020
Advisor: Zhijian Ou, Speech Processing and Machine Intelligence (SPMI) Lab, Tsinghua University	Beijing, China
<ul style="list-style-type: none">• Proposed mixed-feature trans-dimensional random field language models (Mixed TRF LMs), which integrate both discrete n-gram features and neural-network-based features in a single-step model construction.• Applied dynamic noise-contrastive estimation (dynamic NCE) to train Mixed TRF LMs and proved its outperformance in n-best list rescoring tasks on both PTB and Google one-billion-word datasets.• Published an academic paper as 1st author, which is accepted for oral presentation at ICASSP 2020.	

PUBLICATIONS

End-to-End Task-Oriented Dialog Modeling with Semi-Structured Knowledge Management	[Paper]
Authors: Silin Gao , Ryuichi Takanobu, Antoine Bosselut, Minlie Huang	[Code]
IEEE/ACM Transactions on Audio, Speech, and Language Processing (TASLP)	
HyKnow: End-to-End Task-Oriented Dialog Modeling with Hybrid Knowledge Management	[Paper]
Authors: Silin Gao , Ryuichi Takanobu, Wei Peng, Qun Liu, Minlie Huang	[Code]
Findings of the 59th Annual Meeting of the Association for Computational Linguistics (ACL-IJCNLP 2021)	
Paraphrase Augmented Task-Oriented Dialog Generation	[Paper]
Authors: Silin Gao , Yichi Zhang, Zhijian Ou, Zhou Yu	[Code]
Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics (ACL 2020)	

HONORS AND AWARDS

Outstanding Thesis in 2020 Diploma Projects Top 2 thesis in Image and Signal Research Institution at Electronic Engineering Department.	Tsinghua University Jul 2020
2019 Academic Excellence Award Top 5% on GPA in the 2018-2019 academic year.	Tsinghua University Nov 2019
2018 Academic Excellence Award Top 5% on GPA in the 2017-2018 academic year.	Tsinghua University Nov 2018
2017 Academic Excellence Award Top 15% on GPA in the 2016-2017 academic year.	Tsinghua University Nov 2017
2016 Freshmen Scholarship Top 3 of 35,169 students in Tianjin on College Entrance Exam.	Tsinghua University Aug 2016

TECHNICAL SKILLS

Programming: C/C++, Python, MATLAB, SQL, Verilog, HTML, Shell

ML/AI: TensorFlow, PyTorch, Scikit-Learn

Languages: Chinese (Native), English (Fluent)

RELEVANT COURSEWORK

Computer Science: Machine Learning, Data and Algorithm (data structures and algorithms), Database Concepts, Computer Program Design (C/C++), Media and Cognition (artificial intelligence), Advanced Matlab Programming and Its Application, Operating System, Fundamental of Digital Logic and Processor (computer architecture and assembly language)

Mathematics: Probability and Stochastic Processes, Linear Algebra, Discrete Mathematics, Calculus

Others: Cognitive Psychology