# YINPEI DAI

daiyinpei123@163.com ⋄ https://yinpeidai.github.io

## EDUCATION

**Tsinghua University** — Beijing, China
M.S. in Electronic Engineering. Advised by Prof. Zhijian Ou. — 2016.09 - 2019.07

**Tsinghua University** — Beijing, China
B.S. in Mathematics and Physics. GPA: 91/100. — 2012.09 - 2016.07

## PUBLICATIONS

(*) denotes equal contribution

- **Yinpei Dai**, Hangyu Li, Yongbin Li, Jian Sun, Fei Huang, Luo Si, and Xiaodan Zhu, *"Preview, Attend and Review: Schema-Aware Curriculum Learning for Multi-Domain Dialog State Tracking"*, in ACL, 2021

- Bo-Hsiang Tseng, **Yinpei Dai**, Florian Kreyssig, and Bill Byrne. *"Transferable Dialogue Systems and User Simulators"*, in ACL, 2021

- Yajing Sun, Yong Shan, Chengguang Tang, Yue Hu, **Yinpei Dai**, Jing Yu, Jian Sun, Fei Huang, and Luo Si, *"Unsupervised Learning of Deterministic Dialogue Structure with Edge-Enhanced Graph Auto-Encoder"*, in AAAI, 2021

- Haitao Mi, Qiyu Ren, **Yinpei Dai**, Yifan He, Jian Sun, Yongbin Li, Jing Zheng, and Peng Xu. *"Towards Generalized Models for Beyond Domain API Task-oriented Dialogue"*, in DSTC Workshop, AAAI, 2021

- **Yinpei Dai**\*, Yichi Zhang\*, Hong Liu, Zhijian Ou, Yi Huang, and Junlan Feng, *"Elastic CRFs for Open-Ontology Slot Filling"*, in Applied Sciences, 2021

- **Yinpei Dai**, Hangyu Li, Chengguang Tang, Yongbin Li, Jian Sun, and Xiaodan Zhu, *"Learning Low-Resource End-To-End Goal-Oriented Dialog for Fast and Reliable System Deployment"*, in ACL, 2020

- Yichi Zhang, **Yinpei Dai**, Zhijian Ou, Huixin Wang, Junlan Feng, *"Improved Learning of Word Embeddings with Word Definitions and Semantic Injection"*, in INTERSPEECH, 2020

- Lina Rojas-Barahona, Bo-Hsiang Tseng, **Yinpei Dai**, Clare Mansfield, Osman Ramadan, Stefan Ultes, Michael Crawford, and Milica Gasic, *"Deep Learning for Language Understanding of Mental Health Concepts Derived From Cognitive Behavioural Therapy"*, in LOUHI Workshop, EMNLP, 2018

- **Yinpei Dai**, Zhijian Ou, Dawei Ren, and Pengfei Yu, *"Tracking of Enriched Dialog States for Flexible Conversational Information Access"*, in ICASSP, 2018

## EXPERIENCE

**Alibaba DAMO Academy** — Beijing, China
Senior Algorithm Engineer - Natural Language Processing — 2019.07 - till date
Focused on R&D in conversational AI and advancing the state-of-the-art in task-oriented dialog systems

- Proposed Meta-Dialog System to learn low-resource end-to-end dialog. Combined the MAML approach and human-machine collaboration for fast and reliable system deployment (paper accepted to ACL 2020). Developed products accordingly and improved online success rate by 5%+ for all applied businesses.

- Proposed Schema-Aware Dialog State Tracker to solve multi-turn slot-filling problems. Designed a model-agnostic framework to exploit schema and curriculum structure information (paper accepted to ACL 2021).

- Proposed a joint optimization framework for user simulators and dialog systems. Demonstrated the effectiveness in unseen domain adaptation and compositional generalization (paper accepted to ACL 2021).

- Took part in the Ninth Dialog System Technology Challenge (DSTC9) Track 1. Proposed error-fixing ensemble method and entity tracking to improve performance. Won the 1st place in objective evaluation.

- Proposed semi-supervised pre-training to inject useful annotations into pre-trained language models. Leveraged consistency regularization to integrate dialog act labels in dialog pre-training (paper submitted).

**Speech Processing and Machine Intelligence Lab, Tsinghua University**          Beijing, China
Research Assistant                                                                2016.09 - 2019.07
Supervisor: Prof. Zhijian Ou

- Generalized traditional representations of dialog states to contain sentiments and multi-values for each slot. Designed new tracking models for more flexible information access (paper accepted to ICASSP 2018).
- Studied zero-shot natural language understanding in open-ontology slot filling. Proposed to use slot descriptions to create new potential functions for CRF models (paper accepted to Applied Science 2021).

**Dialogue Systems Group, University of Cambridge**                              Cambridge, UK
Research Intern                                                                   2018.06 - 2018.09
Supervised by Prof. Milica Gašić

- Investigated the performance of different distributed representations and deep neural networks on a large-scale mental health dataset (paper accepted in LOUHI 2018).
- Built a psychotherapy-oriented chatbot for mental health.

## HONORS AND AWARDS

- 1st place in track1 objective evaluation, the Ninth Dialog System Technology Challenge (DSTC9)   2020
- National Scholarship, First Class Honor, Tsinghua University                                     2014
- Samsung Scholarship, Second Class Honor, Tsinghua University                                      2013

## PROFESSIONAL SERVICE

- Reviewer - IEEE Access
- Reviewer - AAAI 2021
- Reviewer - EMNLP 2021
- Reviewer - AAAI 2022

## INVITED TALK

- *Learning Low-Resource End-To-End Goal-Oriented Dialog*                                           2020.08.21
  - Presented at Dialog Systems and Machine Learning Group, Heinrich Heine University Düsseldorf

- *Advanced Markov Chain Monte Carlo algorithms*                                                    2014.10.08
  - Presented at Integrated Vision and Intelligent Perception Group, Tsinghua University

## TEACHING

- TA, Theory and Applications of Probabilistic Graphical Models (80230652), THU, Spring 2018
- TA, Computer Program Design I (30230672), THU, Fall 2017
- TA, Probability and Stochastic Processes I (30230742), THU, Spring 2017
- TA, Probability and Stochastic Processes II (30230783), THU, Fall 2016

## SKILLS

| | |
|---|---|
| **Programming** | Python, Shell, C/C++, MySQL, Matlab, HTML/CSS |
| **Libraries** | Tensorflow, Pytorch, Transformers, Spacy, NLTK, Scikit-learn |
| **Web Framework** | Django, Flask |
| **Tools** | LaTeX, Git, Docker |