

Xiaohan Zou

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Education

Boston University	Boston, MA
M.S. in Computer Science, GPA: 3.79/4.0	09/2021 - 01/2023
Tongji University	Shanghai, China
B.Eng. in Software Engineering, GPA: 84.35/100	09/2016 - 07/2020

Publications and Preprints (also see [Google Scholar](#))

- P1 **TokenFlow: Rethinking Fine-grained Cross-modal Alignment in Vision-Language Retrieval**
[Xiaohan Zou](#), Changqiao Wu, Lele Cheng, Zhongyuan Wang
Preprint, 2022
- P2 **Efficient Meta-Learning for Continual Learning with Taylor Expansion Approximation**
[Xiaohan Zou](#), Tong Lin
International Joint Conference on Neural Networks (IJCNN), 2022 (*Oral*)
- P3 **To be an Artist: Automatic Generation on Food Image Aesthetic Captioning**
[Xiaohan Zou](#), Cheng Lin, Yinjia Zhang, Qinpei Zhao
International Conference on Tools with Artificial Intelligence (ICTAI), 2020 (*Oral*)
- P4 **A Survey on Application of Knowledge Graph**
[Xiaohan Zou](#)
International Conference on Control Engineering and Artificial Intelligence (CCEAI), 2020

Industry Experience

Machine Learning Engineer Intern	07/2021 - 07/2022
Kuaishou Technology	Beijing, China
<ul style="list-style-type: none">Devised a new model-agnostic formulation for fine-grained cross-modal semantic alignment and subsumed the recent popular works into the proposed schemeProposed a fine-grained video-text retrieval method that achieves better or on-par performance against the SoTA approaches with heavy model design by only altering the similarity function (see P1)Built a highly flexible PyTorch codebase for video-text retrieval to benefit the group members' research work	
Software Engineer Intern	10/2020 - 06/2021
China Electronics Technology Group Corporation	Chongqing, China
<ul style="list-style-type: none">Involved in building a security visualization system for an archaeological site using Vue and Cesium	
Game Engineer Intern	10/2019 - 05/2020
Banana Interactive	Shanghai, China
<ul style="list-style-type: none">Developed and maintained 3 H5 games using JavaScript and Affinity Designer	

Research Experience

Scalable Parameter-Efficient Continual Learning	09/2022 - Present
Boston University (Advisor: Prof. Bryan Plummer)	Boston, MA
<ul style="list-style-type: none">Achieved zero forgetting using an arbitrary, fixed parameter budget and no episodic memoryProposed to learn task-specific networks with shared weight templates, where each network layer is defined as the linear combination of the templatesSurpassed most of the recent methods even when using less than one-fifth of the number of parameters	

Efficient Meta-Learning for Continual Learning

09/2021 - 01/2022

Peking University (Advisor: Prof. [Tong Lin](#))

Remote

- Designed an efficient method for parameter importance estimation via Taylor expansion
- Proposed a fast meta-learning algorithm for continual learning problems, which expresses the gradient of meta-update in closed-form instead of using Hessian information, **published in IJCNN 2022** (see [P2](#))
- Outperformed strong baselines while optimizing much more efficient on popular benchmarks

Food Image Aesthetic Captioning

03/2020 - 06/2020

Tongji University (Advisor: Prof. [Qinpei Zhao](#))

Shanghai, China

- Proposed a novel framework consisting of a single-attribute captioning module and an unsupervised text summarization module to generate aesthetic captions for food images, **published in ICTAI 2020** (see [P3](#))
- Designed a data filtering strategy inspired by TF-IDF method for building a [dataset](#) for this new task
- Introduced two new evaluation criteria to assess the novelty and diversity of the generated captions
- Outperformed baselines and existing methods substantially in terms of diversity, novelty, and coherence

Semi-Supervised Machine Translation

07/2018 - 08/2018

Peking University (Advisor: Prof. [Tong Lin](#))

Beijing, China

- Proposed a dual learning framework based on shared hidden space to utilize the structure duality to boost the learning of two dual tasks and better regularize the model
- Designed two denoising auto-encoders consisting of encoders and decoders of two traditional Seq2Seq neural machine translators to make use of unpaired data
- Outperformed strong baselines by 1.0-2.9 BLEU on IWSLT'15 (English-Vietnamese) and WMT'14 (English-German), the improvement is more obvious when labeled data is little

Awards and Honors

Bronze , China Collegiate Programming Contest (CCPC)	2018
Finalist , ACM International Collegiate Programming Contest (ICPC) Asia Regional	2018
Second Prize , China Mathematical Contest in Modeling (CUMCM)	2017, 2018
Second Prize , Tongji University Programming Contest	2017, 2018
Second Prize , East China Normal University Programming Contest	2017

Core Courses

Machine Learning: Machine Learning, Image and Video Computing, Computational Tools for Data Science

Mathematics: Probability and Mathematical Statistics, Calculus, Linear Algebra, Discrete Mathematics

Other Activities

Vice Chief Technology Officer & Chief Experience Officer, Tongji Microsoft Student Club	2018 - 2019
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Skills

Programming Languages: Python, JavaScript/TypeScript, HTML/CSS, Java, C/C++

Tools and Frameworks: Git, PyTorch, Keras, scikit-learn, Linux, Vue, React, Django, \LaTeX

Languages: Chinese (native), English (proficient)