

Jialei Chen

Research Internship Application

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EDUCATION

Ph.D student, Intelligent Systems (Ph.D advisor: Daisuke Deguchi, Hiroshi Murase) School of Informatics, Nagoya University	2022.10 — now
Master, Information and Communication Engineering (master advisor: Chong Fu) School of Computer Science and Engineering, Northeastern University (China)	2019.9 — 2022.7
Bachelor of Engineering, Communication Engineering (GPA: 3.5/5) School of Computer and Communication Engineering, Northeastern University (China)	2015.9 — 2019.7

RESEARCH INTERESTS

- Semantic segmentation, Zero-shot learning, Multi-modality Learning, Open-vocabulary Learning, Computer vision

RESEARCH EXPERIENCE (SELECTED)

My research focuses on developing high-performance and efficient deep learning models for zero-shot segmentation, which aims to pixel-wisely understand an image and generalize to unlimited classes. The key outcomes of this work are listed as follows:

Journal Publications

- **Jialei Chen**, Daisuke Deguchi, Chenkai Zhang, Xu Zheng, Hiroshi Murase; **Frozen is Better than Learning: A New Design of Prototype-Based Classifier for Semantic Segmentation**; *Pattern Recognition* (IF 7.5 / JCR Q1)
<https://www.sciencedirect.com/science/article/pii/S0031320324001821>
- **Jialei Chen**, Chong Fu, Haoyu Xie, Xu Zheng, Chiu-Wing Sham; **Uncertainty Teacher with Dense Focal Loss for Semi-Supervised Medical Image Segmentation**; *Computers in Biology and Medicine* (IF 7.0 / JCR Q1)
<https://www.sciencedirect.com/science/article/pii/S001048252200751X>
- Zhenzhen Quan, **Jialei Chen**, Daisuke Deguchi, Jie Sun, Chenkai Zhang, Yujun Li, Hiroshi Murase; **Semantic Matters: A Constrained Approach for Zero-Shot Video Action Recognition**; *Pattern Recognition* (IF 7.5 / JCR Q1)
<https://www.sciencedirect.com/science/article/pii/S0031320325000627>
- Chenkai Zhang, Daisuke Deguchi, **Jialei Chen**, Hiroshi Murase; **Toward Explainable End-to-End Driving Models via Simplified Objectification Constraints**; *IEEE Transactions on Intelligent Transportation Systems* (IF 7.9 / JCR Q1)
<https://ieeexplore.ieee.org/abstract/document/10505932>

Under Review / Preprints

- **Jialei Chen**, Daisuke Deguchi, Chenkai Zhang, Xu Zheng, and Hiroshi Murase; **Clip is Also a Good Teacher: A New Learning Framework for Inductive Zero-Shot Semantic Segmentation**; *arXiv preprint*, submitted to *IEEE Transactions on Circuits and Systems for Video Technology*
<https://arxiv.org/pdf/2310.02296>
- **Jialei Chen**, Daisuke Deguchi, Chenkai Zhang, and Hiroshi Murase; **Generalizable Semantic Vision Query Generation for Zero-Shot Panoptic and Semantic Segmentation**; *arXiv preprint*, submitted to *International Journal on Computer Vision*
<https://arxiv.org/pdf/2402.13697>
- **Training-Free Open-Vocabulary Semantic Segmentation with Affinity Pyramid Refinement** (First Author)
Submitted to *ICCV 2025*
- **BiXFormer: A Robust Framework for Maximizing Modality Effectiveness in Multi-Modal Semantic Segmentation** (First Author)
Submitted to *ICCV 2025*

EXPERIENCE AND SKILL RELATED TO THE APPLIED TOPICS

- **Programming:** Python, PyTorch, MMsegmentation, MMDetection
- **Development:** Model implementation, large-scale training, evaluation on benchmarks (ADE20K, COCO, etc.)
- **Vision-Foundation Models:** CLIP, DINO

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ACADEMIC SERVICES

Reviewers for CVPR, IJCNN, IEEE Signal Processing Letters

AWARDS

- First class academic scholarship, Northeastern University, 2019
- Second class academic scholarship, Northeastern University, 2020
- “Towards Zero-Shot Semantic Segmentation based on Vision-Language Model,” Excellent Presentation Award (Selected by Faculty) at Midterm Presentation, Nagoya University, 2024

LANGUAGE

Japanese: conversational, English: Fluent, Chinese: Native