# Jialei Chen

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名古屋大学
NAGOYA UNIVERSITY

## 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 ACHIEVEMENTS (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

### International Conference

- Ding Zhong, Xu Zheng, Chenfei Liao, Yuanhuiyi Lyu, **Jialei Chen**, Shengyang Wu, Linfeng Zhang, Xuming Hu, OmniSAM: Omnidirectional Segment Anything Model for UDA in Panoramic Semantic Segmentation, ICCV2025 (highlight)

- **Jialei Chen**, Dongyue Li, Chong Yi, Xu Zheng, Ito Seigo, Daisuke Deguchi, Hiroshi Murase, **Split Matching for Inductive Zero-shot Semantic Segmentation**, BMVC2025, Accepted.

- **Jialei Chen**, Dongyue Li, Chong Yi, Xu Zheng, Ito Seigo, Daisuke Deguchi, Hiroshi Murase, **Semantic-driven Distillation for Transductive Zero-shot Semantic Segmentation**, The IEEE International Conference on Intelligent Transportation Systems 2025 (ITSC 2025), Accepted.

- Dongyue Li, **Jialei Chen**, Seigo Ito, Hiroshi Murase, Daisuke Deguchi, **CQVPR: Landmark-Aware Contextual Queries for Visual Place Recognition**, The IEEE International Conference on Intelligent Transportation Systems 2025 (ITSC 2025), Accepted.

- **Jialei Chen**, Daisuke Deguchi, Chenkai Zhang, Xu Zheng, and Hiroshi Murase, **Centroid Module for Shaping Feature Space in Semantic Segmentation**, Proceedings of the 3rd Asia Conference on Algorithms, Computing and Machine Learning, 2024.

- **Jialei Chen**, Daisuke Deguchi, Chenkai Zhang, Zhenzhen Quan, Seigo Ito, Hiroshi Murase, **Multi-group Vision Semantic Centroid for Semantic Segmentation**, International Workshop on Frontiers of Computer Vision, 2025.

- Zhenzhen Quan, Daisuke Deguchi, **Jialei Chen**, Chenkai Zhang, Yujun Li, Seigo Ito, Hiroshi Murase, **A Cross-Modal Knowledge Distillation Approach for RGB-to-Infrared Video Action Recognition**, International Workshop on Frontiers of Computer Vision, 2025.

- Chenkai ZHANG, Daisuke DEGUCHI, **Jialei Chen**, Zhenzhen QUAN, Hiroshi MURASE, **CROCODILE: Crop-based Contrastive Discriminative Learning for Enhancing Explainability of End-to-End Driving Models**, Proceedings of the Asian Conference on Computer Vision, 2024.

- Hiroto Murakami, **Jialei Chen**, Daisuke Deguchi, Takatsugu Hirayama, Yasutomo Kawanishi, Hiroshi Murase, **Pedestrian's Gaze Object Detection in Traffic Scene**, Proceedings of the 19th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications (VISAPP), 2024.

- Chenkai Zhang, Daisuke Deguchi, **Jialei Chen**, Hiroshi Murase, **Comprehensive Evaluation of End-to-End Driving Model Explanations for Autonomous Vehicles**, Proceedings of the 19th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications (VISAPP), 2024.

## Domestic Conference

- **Jialei Chen**, Daisuke Deguchi, Chenkai Zhang, Xu Zheng, and Hiroshi Murase, **Pyramid Window Attention for Open-Vocabulary Semantic Segmentation Inference**, MIRU2025 (oral).

- **Jialei Chen**, Daisuke Deguchi, Chenkai Zhang, Xu Zheng, and Hiroshi Murase, **A Study on Fixed Orthogonal Prototype Classifier for Semantic Segmentation**, PRMU, 2024.

- **Jialei Chen**, Daisuke Deguchi, Chenkai Zhang, and Hiroshi Murase, **Distill from CLIP by Token Alignment for Inductive Zero-shot Semantic Segmentation**, Proceedings of 27th Meeting on Image Recognition and Understanding (MIRU), 2024.

- 星谷那月, 出口大輔, 陳嘉雷, 村瀬洋, 伊藤誠悟, 物体属性に関する論理制約を用いた車載カメラ画像からの物体検出, 電子情報通信学会技術研究報告 (MVE), 2025.

- Chenkai Zhang, Daisuke Deguchi, **Jialei Chen**, Hiroshi Murase, **A Preliminary Study on Pre-training for Improved Explainability in End-to-End Driving Models**, PRMU 2024.

- Chenkai Zhang, Daisuke Deguchi, **Jialei Chen**, Hiroshi Murase, **Enhancing Explainability of End-to-End Autonomous Driving Models through additional fine-tuning**, Proceedings of 27th Meeting on Image Recognition and Understanding (MIRU), 2024.

- 村上大斗, 陳嘉雷, 出口大輔, 平山高嗣, 川西康友, 村瀬洋, 交通シーン画像からの歩行者の注視対象物推定, 動的画像処理実利用化ワークショップ (DIA2024) 講演論文集.

- 村上大斗, 陳嘉雷, 出口大輔, 平山高嗣, 川西康友, 村瀬洋, 交通シーンにおける歩行者の注視対象物推定の検討, 第 26 回画像の認識・理解シンポジウム (MIRU2023) 論文集.

## 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* (Major Revision)
  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* (Major Revision)
  https://arxiv.org/pdf/2402.13697

- **Training-Free Open-Vocabulary Semantic Segmentation with Affinity Pyramid Refinement** (First Author)
  Submitted to *ICCV 2025* (433).

- **BiXFormer: A Robust Framework for Maximizing Modality Effectiveness in Multi-Modal Semantic Segmentation** (First Author)
  Submitted to *TMM 2025*.

## Academic Services

Reviewers for CVPR, IJCNN, IEEE Signal Processing Letters, EAAI, ITSC

## Awards

- First class academic scholarship, Northeastern University, 2019.
- Second class academic scholarship, Northeastern University, 2020.
- 陳嘉雷, Towards Zero-Shot Semantic Segmentation based on Vision-Language Model, 教員が選ぶ優秀発表賞, 2024.
- 村上大斗, 陳嘉雷, 出口大輔, 平山高嗣, 川西康友, 村瀬洋, 交通シーン画像からの歩行者の注視対象物推定, 研究奨励賞, 2024.
- Chenkai Zhang, Daisuke Deguchi, **Jialei Chen**, Hiroshi Murase, A Preliminary Study on Pre-training for Improved Explainability in End-to-End Driving Models, PRMU 月間ベストプレゼンテーション賞, 2024.

## Language

Japanese: conversational, English: Fluent, Chinese: Native