

# HAOYU XIE

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## EDUCATION

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- *Doctor of Information and Communication Engineering* 2020.09 - 2024.06 (Expected)  
Northeastern University, Supervised by Prof. [Chong Fu](#) Shenyang, China
- *Master of Information and Communication Engineering* 2018.09 - 2020.06  
Northeastern University, Supervised by Associate Prof. [Ce Ji](#) Shenyang, China
- *Bachelor of Communication Engineering* 2014.09 - 2018.06  
Northeastern University Shenyang, China

## INTERNSHIP

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- *School of Computer Science, Faculty of Engineering, University of Sydney* 2022.03 - 2022.11  
Research in Semi-Supervised Semantic Segmentation, Supervised by Dr. [Chang Xu](#) Sydney, Australia

## INTERESTS

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- Semi-Supervised Semantic segmentation, Contrastive Learning,
- 3D tasks, Diffusion Model and NeRF (Under Investigation)

## STRENGTHS

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- Strong Self-motivation and Excellent Organizational Skills
- Extensive Research Experience and Programming Experience
- Clear Paper-logic and Good Paper-writing

## RESEARCH EXPERIENCE

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- **2022.09 - 2022.11**: *Semi-supervised semantic segmentation*  
(First author, submitted to CVPR 2023)  
Under double-blind review.
- **2022.03 - 2022.08**: *Boosting Semi-Supervised Semantic Segmentation with Probabilistic Representations*  
(First author, accepted to AAAI 2023 (Oral). [Paper](#), [Code](#))  
In this paper, we define a new form of representation from the perspective of the probability theory, namely Probabilistic Representation (PR). Considering the probability, PR is modeled as a variable random rather than a fixed vector. On the basis of PR, we propose a Probabilistic Representation Contrastive Learning (PRCL) framework, which still performs well in the contrast despite inaccurate pseudo-labels. Furthermore, we propose a soft freezing strategy, which overcomes the dilemma of simultaneously optimizing the representation and probability. Finally, our PRCL outperforms most SOTAs in semi-supervised semantic segmentation tasks.
- **2021.03 - 2022.02**: *Uncertainty-Aware Deep Co-training for Semi-supervised Medical Image Segmentation*  
(Main Leader, accepted to Computers in Biology and Medicine 2022, JCR 1, IF=6.70, [Paper](#))  
In this paper, we propose a novel uncertainty-aware scheme to make models learn regions purposefully. We employ Monte Carlo Sampling as an estimation method to attain an uncertainty map, which can serve as a weight for losses to force the models to focus on the valuable region according to the characteristics of supervised learning and unsupervised learning. Experimental results show desirable improvements to state-of-the-art counterparts on three challenging medical datasets.
- **2021.03 - 2022.02**: *Uncertainty Teacher with Dense Focal Loss for Semi-supervised Medical Image Segmentation* (Main Leader, accepted to Computers in Biology and Medicine 2022, JCR 1, IF=6.70, [Paper](#))
- **2020.10 - 2021.03**: *Global context aware RCNN for object detection*  
(Second Student Author, accepted to Neural Computing and Applications 2021, JCR 1, CCF C, IF=5.10, [Paper](#))