# Fengbei Liu

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## EDUCATION

**Cornell Tech, Cornell University**                    *New York City, NY, US*
*Postdoctoral Research Associate;*                          *Feb 2024 – Present*
*Supervisor: Prof. Mert Sabuncu*

**Australian Institue for Machine Learning (AIML)**            *Adelaide, Australia*
*Ph.D in Computer Vision and Medical Imaging;*                *Apr 2020 – Oct 2023*
*Supervisor: Prof. Gustavo Carneiro, Prof. Mark Jenkinson*

**University of Adelaide**                              Adelaide, Australia
*Honors in Computer Science; (First Class)*                 *Mar 2019 – Mar 2020*

**University of Adelaide**                              Adelaide, Australia
*Bachelor in Computer Science;*                             *Jul 2015 – Jul 2018*

## RESEARCH INTERESTS

**Keywords: Computer Vision, Medical Image Analysis, Weakly-supervised Learning**

My research interest is in computer vision and medical image anlaysis. I focus on developing weakly-supervised deep learning solutions and its application in medical imaging, including noisy label learning, semi-supervised learning, partial-label learning and active learning.

## PUBLICATIONS

### First-author Publications

**BoMD: Bag of Multi-label Local Descriptors for Noisy Chest X-ray Classification**
*Yuanhong Chen\*, **Fengbei Liu**\*, Hu Wang, Chong Wang, Yuyuan Liu, Yu Tian, Gustavo Carneiro*
ICCV 2023

**Self-supervised Multi-class Pre-training for Unsupervised Anomaly Detection and Segmentation in Medical Images**
*Yu Tian\*, **Fengbei Liu**\*, Guansong Pang, Yuanhong Chen, Yuyuan Liu, Johan W. Verjans, Rajvinder Singh, Gustavo Carneiro*
Medical Image Analysis 2023

**NVUM: Non-volatile Unbiased Memory for Robust Medical Image Classification**
***Fengbei Liu**, Yuanhong Chen, Yu Tian, Yuyuan Liu, Chong Wang, Vasileios Belagiannis, Gustavo Carneiro*
MICCA 2022, Early Accept, featured in ComputerVisionNews

**ACPL: Anti-curriculum Psueod-labelling for Semi-supervised Medical Image Classification**
***Fengbei Liu**\*, Yu Tian\*, Yuanhong Chen, Yuyuan Liu, Vasileios Belagiannis, Gustavo Carneiro*
CVPR 2022

**Self-supervised Mean-teacher for Semi-supervised Chest X-ray Classification**
***Fengbei Liu**, Yu Tian, Filipe R. Cordeiro, Vasileios Belagiannis, Ian Reid, Gustavo Carneiro*
MICCAI-MLMI 2021

**Self-supervised Depth estimation to Regularise Semantic Segmentation in Knee Arthroscopy**
***Fengbei Liu**, Yaqub Jonmohamadi, Gabriel Maicas, Ajay K Pandey, Gustavo Carneiro*
MICCAI 2020

### Co-author Publications

**A Closer Look at Audio-Visual Semantic Segmentation**
*Yuanhong Chen, Yuyuan Liu, Hu Wang, **Fengbei Liu**, Chong Wang, Gustavo Carneiro*
CVPR 2024

**An Interpretable and Accurate Deep-learning Diagnosis Framework Modelled with Fully and Semi-supervised Reciprocal Learning**
*Chong Wang, Yuanhong Chen, **Fengbei Liu**, Michael Elliott, Chun Fung Kwok, Carlos Peña-Solorzano, Helen Frazer, Davis James McCarthy, Gustavo Carneiro*
IEEE Transactions on Medical Imaging 2023

**Learning Support and Trivial Prototypes for Interpretable Image Classification**
*Chong Wang, Yuyuan Liu, Yuanhong Chen, **Fengbei Liu**, Yu Tian, Davis J McCarthy, Helen Frazer, Gustavo Carneiro*
ICCV 2023

**Unsupervised anomaly detection in medical images with a memory-augmented multi-level cross-attentional masked autoencoder**
*Yu Tian, Guansong Pang, Yuyuan Liu, Chong Wang, Yuanhong Chen, **Fengbei Liu**, Rajvinder Singh, Johan W Verjans, Gustavo Carneiro*
MICCAI-MLMI 2023

**Knowledge Distillation to Ensemble Global and Interpretable Prototype-Based Mammogram Classification Models**
*Chong Wang, Yuanhong Chen, Yuyuan Liu, Yu Tian, **Fengbei Liu** Davis J McCarthy, Michael Elliott, Helen Frazer, Gustavo Carneiro*
MICCAI, 2022, Early Accept

**Multi-view Local Co-occurrence and Global Consistency Learning Improve Mammogram Classification Generalisation**
*Yuanhong Chen, Hu Wang, Chong Wang, Yu Tian, **Fengbei Liu**, Yuyuan Liu, Michael Elliott, Davis J McCarthy, Helen Frazer, Gustavo Carneiro*
MICCAI 2022, Early Accept

**Contrastive Transformer-based Multiple Instance Learning for Weakly Supervised Polyp Frame Detection**
*Yu Tian, Guansong Pang, **Fengbei Liu**, Yuyuan Liu, Chong Wang, Yuanhong Chen, Johan W Verjans, Gustavo Carneiro*
MICCAI 2022, Early Accept

**Perturbed and Strict Mean Teachers for Semi-supervised Semantic Segmentation**
*Yuyuan Liu, Yu Tian, Yuanhong Chen, **Fengbei Liu**, Belagiannis Vasileios, Gustavo Carneiro*
CVPR 2022

**Pixel-wise Energy-biased Abstention Learning for Anomaly Segmentation on Complex Urban Driving Scenes**
*Yu Tian\*, Yuyuan Liu\*, Guansong Pang, **Fengbei Liu**, Yuanhong Chen, Gustavo Carneiro*
ECCV 2022, Oral

**Constrained Contrastive Distribution Learning for Unsupervised Anomaly Detection and Localisation in Medical Images**
*Yu Tian, Guansong Pang, **Fengbei Liu**, Yuanhong Chen, Seon Ho Shin, Johan W Verjans, Rajvinder Singh, Gustavo Carneiro*
MICCAI 2021

**3D Semantic Mapping from Arthroscopy using Out-of-distribution Pose and Depth and In-distribution Segmentation Training**
*Yaqub Jonmohamadi, Shahnewaz Ali, **Fengbei Liu**, Jonathan Roberts, Ross Crawford, Gustavo Carneiro, Ajay K Pandey*
MICCAI 2021

## Preprint/Under-Review

**Asymmetric Co-teaching with Multi-view Consensus for Noisy Label Learing**
***Fengbei Liu**, Yuanhong Chen, Chong Wang, Yuyuan Liu, Gustavo Carneiro*

**Partial Label Supervision for Flexible Generative Noisy Label Learning**
***Fengbei Liu**, Yuanhong Chen, Chong Wang, Yuyuan Liu, Gustavo Carneiro*

**Translation consistent semi-supervised segmentation for 3d medical images**
*Yuyuan Liu, Yu Tian, Chong Wang, Yuanhong Chen, **Fengbei Liu**, Vasileios Belagiannis, Gustavo Carneiro*

**BRAIxDet: Learning to Detect Malignant Breast Lesion with Incomplete Annotations**
*Yuanhong Chen, Yuyuan Liu, Chong Wang, Michael Elliott, Chun Fung Kwok, Yu Tian, **Fengbei Liu**, Helen Frazer, Davis J McCarthy, Gustavo Carneiro*

## Professional Activities

**Reviewer:** ICCV 2021/2023, MICCAI 2021, CVPR 2022/2023/2024, ECCV 2022/2024, BMVC 2022, NeurIPS 2023, ICLR 2024, ICML 2024

## Awards & Achievements

**Ph.D Scholarship:** University of Adelaide, Apr 2020

## Skills

**Programming:** Python & Pytorch, Slurm, Docker & Kubernetes

**Language:** Mandarin (native), English (professional)

## References

**Prof. Gustavo Carneiro**
*Professor of AI and Machine Learning, University of Surrey*
g.carneiro@surrey.ac.uk

**Prof. Vasileios Belagiannis**
*Professor, Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU)*
vasileios.belagiannis@fau.de