Fengbei Liu

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Education

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

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*

Generative Noisy Label Learning by Implicit Discriminative Approximation with Partial Label Prior
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*

A Closer Look at Audio-Visual Semantic Segmentation
Yuanhong Chen, Yuyuan Liu, Hu Wang, ***Fengbei Liu****, Chong Wang, 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, ECCV 2022, BMVC 2022, NeurIPS 2023, ICLR 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