LIU TING

Email: *ttinglliu.gmail.com*
Personal Web Page: *ttinglliu.github.io*

EDUCATION

Xi'an Jiaotong University, Software Engineering   Xi'an, **China**
Master of Engineering   Sep 2017 - Jun 2020
Relevant Coursework: Artificial Intelligence, Mathematical Statistics

Fujian Normal University, Digital Media Technology   Fujian, **China**
Bachelor of Engineering, GPA: 3.27/4.0   Sep 2013 - Jun 2017
Relevant Coursework: Advanced Mathematics, Linear Algebra, Discrete Mathematics, Data Structure and
Algorithm, C Language Programming, C++ Object-Oriented Programming

PUBLICATIONS

- **Ting Liu**, Xing An, Yanbo Liu, et al. A Novel Deep Learning System for Breast Lesion Risk Stratification in Ultrasound images. MICCAI, 2022. *LINK*
- Yang Gu, Wen Xu, **Ting Liu**, et al. Ultrasound-based deep learning in the establishment of a breast lesion risk stratification system: a multicenter study. European Radiology, 2022. Under Review.
- Xiaoping Xu, Xiangwei Zeng, **Ting Liu**. Development and Supervision of Artificial Intelligence Breast Ultrasound. 2022. Under Review.
- **Ting Liu**, Xing An, Bin Lin, et al. An Efficient Tracker for Thyroid Nodule Detection and Tracking during Ultrasound Scanning. ASMUS, 2021. *PDF, PPT*
- **Ting Liu**, Lihua Tian. Research and Application on CT Image of Head and Neck Based on 3D Unet. Xi'an Jiaotong University, Excellent Master Dissertation, 2020. *PDF, PPT*
- **Ting Liu**, Xiaodong He, Ruifeng Zhao, et al. 3D U-Net Based Automatic Segmentation of Organs at Risk from CT. Medical Physics, 2019. *PDF, POSTER*

WORK EXPERIENCE

Shenzhen Mindray Bio-Medical Electronics, Co., Ltd.   Beijing, **China**
Medical Image Algorithm Engineer   Sep 2020 - Present

Project 1: Breast Lesion Risk Stratification in Ultrasound Images
- Proposed a deep learning method to classify lesions into benign and malignant and into BI-RADS six categories, simultaneously
- Introduced a task-related soft label generating architecture based on teacher and student model, to improve the overall classification accuracy by about 2%
- Employed a consistency supervision mechanism to constrict predictions of two tasks are consistent
- Designed a cross-class loss function that penalized different degrees of misclassified items with different weights to make the predictions of BI-RADS closer to annotations
- The proposed method achieved the **state-of-the-art** on two public datasets (BUSI and ADIAT)

Project 2: Thyroid Nodule Detection and Tracking during Ultrasound Screening
- Proposed an efficient deep learning tracker for simultaneously detecting and tracking nodules

- Introduced an attention based fusion block to combine the features of previous and current frames, to improve detection accuracies
- Employed an advanced post-processing strategy to train the network to obtain the best prediction in replacing of general post-processing methods
- Developed a mini-batch self-supervised learning module to reduce the false positive rate (FPR) by around 5%
- The proposed method achieved 91% recall with 3.8% FPR at 30 fps on a dataset of 1555 movies
- Performed model compression and installed model in ultrasound machines to run in hospitals

Project 3: Posterior Echo Classification in Breast Ultrasound Images
- Proposed a machine learning method to classify posterior echo into enhancement, xx and xx
- Employed a hierarchical strategy for feature extraction to reduce the influence of noise
- Extracted absolute and relative features, and categorized them based on SVM

SCHOLARSHIPS AND AWARDS
- Mar 2020, Excellent Master Dissertation
- Nov 2019, Excellent Postgraduate
- Sep 2019, Professional Practice Excellent Postgraduate
- Nov 2016, The Second Prize Scholarship
- Dec 2014, National Encouragement Scholarship

SKILLS
- English Skill: IELTS 6.5
- Programming language: Python, PyTorch