Xi Fang

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RESEARCH INTEREST

Artificial Intelligence, Machine Learning, Medical Image Analysis, Computer Vision, Medical Image Segmentation, Medical Image Registration

EDUCATION

Rensselaer Polytechnic Institute 08/2018 - Present
Department of Biomedical Engineering

Wuhan University 09/2014 - 06/2018
School of Computing

RESEARCH EXPERIENCE

Research Assistant 09/2018 - Present
Deep Imaging Analytics Lab, Rensselaer Polytechnic Institute

- Supervised by Dr. Pingkun Yan
- Develop liver segmentation in CT images using Deep CNN for fusion guided intervention in collaboration with NIH (Accepted by IJCARS).
- Develop efficient CNN network for unified segmentation over multiple partially labeled datasets (`https://github.com/DIAL-RPI/PIPO-FAN`, Accepted by IEEE TMI).
- Develop deep learning based algorithm for COVID-19 patient outcome prediction in collaboration with group members and MGH, Harvard Medical School (Accepted by Medical Image Analysis and IJCARS)
- Develop a novel type of novel loss functions to complement existing pixel-wise losses for segmentation tasks (Submitted to IEEE TMI)
- Develop PointNet++ based network to accelerate the simulation of facial appearance change following bony movements in collaboration with Houston Methodist Research Institute (Ongoing)

Research team member 09/2016 - 08/2017
The School of Computing, Wuhan University

- Supervised by Dr. Bo Du
- Learned different deep learning methods.
- Applied popular deep neural networks, including FCN and U-Net to segment prostate in MRI images.

INTERN EXPERIENCE

Research Intern 09/2017 - 02/2018
State Key Laboratory of Intelligent Technology and Systems, Tsinghua University

- Supervised by Dr. Xiaolin Hu
- Completed on image captioning task by developing new attention method based on saliency.

Deep Learning Executive Engineer(Intern) 03/2017 - 05/2017
Infervision

- A project cooperated with Tongji Hospital
- Applied deep learning methods to detect lung nodules in chest X-ray images.
- Alleviated false positive problem by introducing a new class.

AWARDS

Ranked the top 12th among 94 students in Duke Tsinghua MLSS 08/2017

- With strong recommendation letter from Dr. Lawrence Carin, Vice Provost for Research, Duke University

Meritorious Winner Mathematical Contest In Modeling (MCM) 01/2017

Selected Publications

1. **Xi Fang**, Uwe Kruger, Fatemeh Homayounieh, Hanqing Chao, Jiajin Zhang, Subba R. Digumarthy, Chiara D. Arru, Mannudeep K. Kalra, Pingkun Yan, "Association of AI Quantified COVID-19 Chest CT and Patient Outcome", International Journal of Computer Assisted Radiology and Surgery. `https://doi.org/10.1007/s11548-020-02299-5`. 03/2021
2. Hanqing Chao*, **Xi Fang***, Jiajin Zhang*, Fatemeh Homayounieh, Chiara D. Arrub, Subba R. Digumarthyb, Rosa Babaeic, Hadi K. Mobinc, Iman Mohsenic, Luca Sabad, Alessandro Carrieroe, Zeno Falaschie, Alessio Paschee, Ge Wanga, Mannudeep K. Kalrab, Pingkun Yan. "Integrative analysis for COVID-19 patient outcome prediction", Med Image Analysis. `https://doi.org/10.1016/j.media.2020.101844`. (* Equal contribution) 01/2021
3. **Xi Fang**, Thomas Sanford, Baris Turkbey, Sheng Xu, Bradford J. Wood, and Pingkun Yan, "Division and Fusion: Rethink Convolutional Kernels for 3D Medical Image Segmentation", International Workshop on Machine Learning in Medical Imaging, pp. 160-169. Springer, Cham, 2020 09/2020
4. **Xi Fang**, Pingkun Yan, "Multi-organ Segmentation over Partially Labeled Datasets with Multi-scale Feature Abstraction", IEEE transaction on medical imaging. doi: 10.1109/TMI.2020.3001036. 06/2020
5. **Xi Fang**, Sheng Xu, Bradford J Wood, Pingkun Yan, "Deep learning-based liver segmentation for fusion-guided intervention", International Journal of Computer Assisted Radiology and Surgery (2020). `https://doi.org/10.1007/s11548-020-02147-6` 04/2020
6. **Xi Fang**, Bo Du, Sheng Xu, Bradford J Wood, Pingkun Yan, "Unified Multi-scale Feature Abstraction for Medical Image Segmentation", Medical Imaging 2020: Image Processing. Vol. 11313. International Society for Optics and Photonics, 2020. (Oral) 03/2020

TECHNOLOGY SKILLS

Programming Languages:

- Python
- Matlab
- C/C++

Deep Learning Software Libraries:

- PyTorch
- TensorFlow
- MXNet