Hongxu Yang | Curriculum Vitae

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Summary

- Experienced researcher in machine learning, deep learning, signal/image processing
- First author of 10+ top international conference and journal publications in the field, and 2 patents
- Interdisciplinary collaborator with experiences in dataset collection, model design and deployment

Research Experience

Medical instrument detection in 3D US images

SPS-VCA, Eindhoven University of Technology/IBS, Philips Research　　　　*Dec. 2016–Dec. 2020*

- Initiated and developed deep learning-based instrument detection framework for cardiac catherization
- Conducted dataset collection on animal tissues and human patients for machine & deep learning
- Proposed novel methods for efficient and accurate 3D image segmentation
- Published papers in high impact conference and journal

Wearable Device and EEG-based authentication keys

SPS, Eindhoven University of Technology/IMEC Holst-Centre　　　　*Nov. 2015–Sep. 2016*

- Developed an autoregressive-based and posterior probability encryption algorithm for biometric
- Published a paper on international conference

Education

Doctor of Philosophy, Artificial Intelligence, CS & EE	**Eindhoven, Netherlands**
Eindhoven University of Technology, NL	*Dec. 2016–Dec. 2020*
Master of Science, Signal Processing, EE	**Eindhoven, Netherlands**
Eindhoven University of Technology, NL	*Sep. 2014–Nov. 2016*
Bachelor of Engineering, EE	**Tianjin, China**
Tianjin University/Nankai University, CN	*Sep. 2010–Jul. 2014*

Software Skills

Python　　MatLab　　ROS
Image Processing libraries (Scikit-learn, Scikit-image, OpenCV...)
AI Frameworks (TensorFlow, PyTorch, Keras...)

R&D Skills

Data organization&collection&processing
Deep learning model deployment for ROS-based platform

Ph.D. Project topics

A real-time instrument detection method in 3D US

A detection algorithm based on ROS & Deep learning　　　　*Nov. 2018–Now.*

3D catheter segmentation in Frustum ultrasound
SPIE 2020 & looking for a journal   *Jun. 2019–Sep. 2020*

DNQ-driven semi-supervised learning to exploit unlabeled images
MICCAI 2020 paper & IEEE TMI (major revision)   *Nov. 2019–Jun. 2020*

Efficient 3D image processing by hybrid dimension architecture
IEEE T-BME & A Patent   *Apr. 2019–Nov. 2019*

A faster supervised learning-based medical instrument segmentation
ICIP 2019 & ISBI 2019 & MICCAI 2019 & MedIA   *Nov. 2018–Apr. 2019*

A voxel-of-interest-based catheter segmentation method in 3D US
ICIP 2018 & IJCARS & A Patent   *April. 2018–Nov. 2018*

Machine learning-based medical instrument detection & model-fitting
SPIE MI 2018 & JMI   *Dec. 2016–April. 2018*

Patent Applications

- **Object detection ultrasound system by dimension-hybrid method:** *Hongxu Yang, Alexander F Kolen, Caifeng Shan, Peter H.N. de With* (filed in 2019)
- **Identifying an interventional device in medical images:** *Hongxu Yang, Alexander F Kolen, Caifeng Shan, Peter H.N. de With* (filed in 2018, published in 2020)

Selected Publication (first author)

- **DQN-Driven Medical Instrument Segmentation in 3D US by Uncertainty-aware and Contextual Constrained Semi-Supervised Learning:** *Major revision*
- **Deep Q-Network-Driven Catheter Segmentation in 3D US by Hybrid Constrained Semi-Supervised Learning and Dual-UNet:** *MICCAI 2020 (oral)*
- **Efficient Medical Instrument Detection in 3D Volumetric Ultrasound Data:** *IEEE TBME 2020*
- **Efficient and Robust Instrument Segmentation in 3D Ultrasound Using Patch-of-Interest-FuseNet with Hybrid Loss:** *MedIA 2020*
- **Transferring from ex-vivo to in-vivo: Instrument Localization in 3D Cardiac Ultrasound Using Pyramid-UNet with Hybrid Loss:** *MICCAI 2019 (oral)*
- **Catheter localization in 3D ultrasound using voxel-of-interest-based ConvNets for cardiac intervention:** *IJCARS 2019*

Services

Reviewer
MICCAI, IEEE JBHI, AE-CAI

Language

English (fluent)   Chinese (native)

Reference

Available upon a request