

# Hongxu Yang | Curriculum Vitae

☎ +31 6 24232357 • ✉ h.yang@tue.nl/yunghx@hotmail.com

🌐 <https://www.hongxu-yang.com/>

## Research Interests

---

Machine Learning, Deep Learning, Signal/Image Processing

## Research Experience

---

### Medical instrument detection in 3D US images

Eindhoven University of Technology/Philips Research, NL

Dec. 2016–Dec. 2020

### Wearable Device and EEG-based authentication keys

Eindhoven University of Technology/IMEC, NL

Nov. 2015–Sep. 2016

## Education

---

### Doctor of Philosophy, Artificial Intelligence, Computer Science

Eindhoven University of Technology, NL

Eindhoven, Netherlands

Dec. 2016–Dec. 2020

### Master of Science, Signal Processing, Electrical Engineering

Eindhoven University of Technology, NL

Eindhoven, Netherlands

Sep. 2014–Nov. 2016

### Bachelor of Engineering, Electrical Engineering

Tianjin University/Nankai University, CN

Tianjin, China

Sep. 2010–Jul. 2014

## Software Skills

---

Python    MatLab    ROS

Image Processing libraries (Scikit-learn, Scikit-image, OpenCV...)

AI Frameworks (TensorFlow, PyTorch,...)

## Ph.D. Project topics

---

### A real-time catheter segmentation method in 3D US

A Demo based on ROS

Nov. 2018–Jun. 2020

### DNQ-driven semi-supervised learning-based instrument segmentation

MICCAI 2020 paper & IEEE TMI (submitted)

Nov. 2019–Jun. 2020

### Efficient multi-dimensional CNN for fast instrument detection

IEEE T-BME & A Patent

Apr. 2019–Nov. 2019

### A faster supervised learning-based medical instrument segmentation

ICIP 2019 & ISBI 2019 & MICCAI 2019 & MedIA (revised)

Nov. 2018–Apr. 2019

### A fast voxel-of-interest-based catheter segmentation 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 on 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)

---

- **Medical Instrument Detection in Ultrasound-Guided Interventions: A Review:** *IEEE JBHI submitted*
- **DQN-Driven Medical Instrument Segmentation in 3D US by Uncertainty-aware and Contextual Constrained Semi-supervised Learning:** *IEEE TMI submitted*
- **Deep Q-Network-Driven Catheter Segmentation in 3D US by Hybrid Constrained Semi-Supervised Learning and Dual-UNet:** *MICCAI 2020*
- **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 revised*
- **Transferring from ex-vivo to in-vivo: Instrument Localization in 3D Cardiac Ultrasound Using Pyramid-UNet with Hybrid Loss:** *MICCAI 2019*
- **Catheter localization in 3D ultrasound using voxel-of-interest-based ConvNets for cardiac intervention:** *International Journal of Computer Assisted Radiology and Surgery 2019*
- **Catheter segmentation in three-dimensional ultrasound images by feature fusion and model fitting:** *Journal of Medical Imaging 2019*

## Services

---

### Reviewer

*International Conference on Medical Image Computing and Computer Assisted Intervention* Apr. 2020–

### Reviewer

*IEEE Journal of Biomedical and Health Informatics*

Mar. 2019–

### Reviewer

*Augmented Environments for Computer Assisted Interventions*

Apr. 2019–

## Language

---

English (fluent)      Chinese (native)

## Reference

---

Available upon a request