ZIJIAN WU

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EDUCATION

University of British Columbia Sept. 2023 - Present
Ph.D. in Electrical and Computer Engineering Advisor: Prof. Tim Salcudean Vancouver, BC, Canada

Johns Hopkins University Sept. 2021 - May 2023
M.S.E. in Robotics Baltimore, MD, USA

University of Electronic Science and Technology of China (UESTC) Sept. 2016 - Jul. 2020
B.E. in Mechatronics Engineering Chengdu, China

WORK EXPERIENCE

Moon Surgical June. 2023 - Nov. 2023
Machine Learning Intern San Carlos, CA, USA

- Implemented state-of-the-art deep learning models for surgical video semantic segmentation using **PyTorch**.
- Deployed deep learning algorithms into the real-time surgical robotic system with **C++** and **TensorRT**.
- Developed the pipeline of anatomy tracking based on speech recognition, semantic segmentation, and motion planning.

School of Automation Engineering, UESTC Aug. 2020 - Jul. 2021
Research Assistant, Vision Measuring and Learning Lab Chengdu, China

- Implemented image processing algorithms and developed multi-process integrated software system with **C++** and **Qt**; troubleshooting of embedded software and hardware-in-the-loop system.
- Prototyped a computer vision-based desktop Surface Mounting Machine and optimized its lighting system.

SELECTED PROJECTS

Open Source Contributor for PyHealth: a Deep Learning Toolkit for Healthcare Applications
A Deep Learning Toolkit For Healthcare Applications, Advisor: Prof. Jimeng Sun, UIUC Jun. 2023 - Present

- Integrated torchvision classification models and pretrained weights into Pyhealth;
- Implemented a prompt-based zero-shot medical image classification pipeline based on MedCLIP;
- Developed new datasets, CheXpert and MIMIC-CXR, which provide Radiology Images and associated Sentence-level Semantic Labels.

Augmented Mirror for Medical Applications in Orthopedics
Best Demo Runner-up, CS 601.654 Augmented Reality, JHU Oct. 2022 - Dec. 2022

- Implemented an *Augmented Mirror* to help surgeons to align surgical instruments with the target pose by rendering images from non-egocentric perspectives; Developed **Unity** package and deployed it to both PC (via webcam) and **HoloLens 2**.

PUBLICATIONS

1. **Z. Wu***, H. Moradi*, S. Yang, H. Song, E. Boctor, S. Salcudean, "Automatic Search for Photoacoustic Marker Using Automated Transrectal Ultrasound", Biomedical Optics Express. [Link]
2. V. Vousten*, H. Moradi*, **Z. Wu**, E. Boctor, S. Salcudean, "Laser Diode Photoacoustic Point Source Detection: Machine learning-based Denoising and Reconstruction", Optics Express. [Link]
3. R. Soberanis, **Z. Wu**, K. Kleinman, C. Cross, B. Smith, M. Unberath, T. Canares,"A Novel Method to Screen for Urinary Tract Infections with Artificial Intelligence and Smartphone Images", Pediatric Academic Societies (PAS) Meeting 2023.
4. H. Song*, S. Yang*, **Z. Wu**, H. Moradi, R. Taylor, J. Kang, S. Salcudean, E. Boctor, "Arc-to-line Frame Registration Method for Ultrasound and Photoacoustic Image-guided Intraoperative Robot-assisted Laparoscopic Prostatectomy", International Journal of Computer Assisted Radiology and Surgery. (IPCAI 2023 **Best Paper Runner-up Award)** [Link]

* Equal Authorship Contribution

TECHNICAL SKILLS

Programming Languages: Python, C++, MATLAB, C#
Software and Tools: PyTorch, TensorRT, ROS, Git, Unity, Qt/PyQt