ZIJIAN WU

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EDUCATION

Johns Hopkins University Sept. 2021 - present
M.S.E. in Robotics; GPA: 3.7/4.0 *Baltimore, MD*

University of Electronic Science and Technology of China (UESTC) Sept. 2016 - Jul. 2020
B.E. in Mechatronics Engineering; GPA: 3.76/4.0 *Chengdu, China*

RESEARCH PROJECTS

NeRF Based Depth Estimation for Medical Diagnosis May. 2022 - present
Advisor: Prof. Mathias Unberath and Dr. Roger Soberanis, ARCADE Lab, JHU

- Exploiting a NeRF-based depth estimation method for auxiliary diagnosis of strep throat infection;
- Proposed a method based on NeRF combining learning-based descriptor with depth supervision to tackle the challenge due to text-scarce surface and lack of views;
- Comparing the results of 3D reconstruction and depth estimation with other state-of-art methods on throat dataset collected by JHH.

Photoacoustic Surgical Guidance System in da Vinci Platform Jan. 2022 - Present
Advisor: Prof. Emad M. Boctor and Dr. Hamid Moradi, MUSiiC Lab, JHU

- Integrated the overall system and implemented the pipeline of surgical tool tracking;
- Validated the search algorithm for photoacoustic virtual marker's localization by experiments;
- Implemented an arc-line registration algorithm requiring no coordinates in the fluorescence image.

Iterative Closest Point (ICP)-Based Registration Algorithm Nov. 2021
Computer Integrated Surgery I Course Project, Instructor: Prof. Russell H. Taylor

- Developed a 3D Cartesian transformations package and a point cloud registration algorithm;
- Modeled electromagnetic (EM) tracking system's distortion and implemented distortion calibration;
- Computed the rigid transformation of the point cloud w.r.t the 3D model using OcTree-based ICP.

WORK EXPERIENCE

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

- Developed a robust, accurate, and user-friendly vision system for Surface Mounting Machine for precise positioning, automatic picking, and placing of electronic components;
- Built and debugged a prototype of Surface Mounting Machine from scratch;
- Improved lighting system and mechanical structure of the prototype.

PUBLICATIONS

1. Yanli Gong, Hai Jiang, Yunfei Bai, Zijian Wu, Bei Peng, Xuan Weng. "Numerical Studies of Electrokinetically Controlled Concentration of Diluted DNA Molecules in a T-Shaped Microchannel", *IEEE Access*, vol. 8, pp. 5601-5610, 2020.
2. Hamid Moradi, Hyunwoo Song, Zijian Wu, Keshuai Xu, Emad M. Boctor, Septimiu E. Salcudean. "Automatic Search for Photoacoustic Marker Using Transrectal Ultrasound Actuator", *2022 IEEE International Ultrasonics Symposium (IUS)*. Abstract Accepted.

AWARDS

Golden Award and Nominated Best Hardware Project Nov. 2019
International Genetically Engineered Machine Competition (iGEM) 2019 *Boston, MA*

- Mentored the Ciprofloxacin fluorescence detection instrument project as the team advisor.

Golden Award and Best Energy Project (1st in Energy Track) Oct. 2018
International Genetically Engineered Machine Competition (iGEM) 2018 *Boston, MA*

- Responsible for Mathematical Modelling;

TECHNICAL SKILLS

Programming Languages: C++, Python, MATLAB

Softwares and Tools: ROS, Git, PyTorch, OpenCV, Qt/PyQt, SolidWorks, ANSYS, COMSOL