Yuli Wang

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EDUCATION

University of California, Santa Cruz — Santa Cruz, CA
Master of Science, Electrical and Computer Engineering, GPA: 3.88/4.0 — Sep. 2019 – Present

Huazhong University of Science and Technology — Wuhan, China
Bachelor of Engineering, Mechanical Engineering, GPA: 3.74/4.0 — Sep. 2014 – Jul. 2018

Missouri University of Science and Technology — Rolla, MO
Visiting student, Electrical and Computer Engineering — Jul. 2017 – Oct. 2017

EXPERIENCE

UC, Santa Cruz — Sep. 2019 - Present
Research Assistant — *Santa Cruz, CA*

Head and Neck Organ-dedicated Positron Emission Tomography (PET)

- Worked on designing, building, and evaluation of a semiconductor based Head-and-Neck dedicated PET system, collaborating with *SLAC National Accelerator Laboratory* and *Carle Foundation Hospital*.
- Developed a penalized maximum-likelihood image reconstruction algorithm for improving limited-angle artifacts of imaging system.

Software Related Developments for Photon Detection and Medical Image

- Developed a python based simulation model for studying the detection sensitivity of optical properties-based radiation detection for PET.
- Applied a two-stage framework, integrating a region-based convolutional networks (faster-rcnn) and a modified fully convolutional network (FCN), for targets localization in medical images.

Stanford University — Aug. 2018 - Feb. 2019
Research Assistant — *Palo Alto, CA*

Single Photon Detection Using Optical Properties Modulation based Method for PET

- Developed novel detectors for PET system based on electro-optical modulation of materials' optical properties, as a potential way to dramatically improve PET coincidence time resolution
- Used new perovskite materials to study the prompt Cherenkov luminescence for PET
- Collaborated with *Stanford Nano Shared Facilities* to investigate the dependence of detection sensitivity on electric field distribution for ultrafast optical modulation.

Huazhong University of Science and Technology — Oct. 2017 - Aug. 2018
Research Assistant — *Wuhan, China*

New Mechanisms of Ionization Radiation Detection for Time-of-Flight (ToF) PET

- Established various optical test beds to detect fast modulations of candidate materials' optical properties, and to investigate the feasibility of optical property modulation-based detection method for PET, collaborating with *Lawrence Berkeley National Lab*.
- Evaluated the sensitivity and stability of optical setups using optical properties modulation based detection method.

Missouri University of Science and Technology — July-Sep. 2017
Summer Research Intern — *Rolla, MO*

Electric Energy Harvesting Supply for Underwater Wireless Sensor Networks

- Designed, prototyped and evaluated an energy-harvesting power supplier consisting with a simulation optimized helical turbine and a DC-DC converter based charging circuit.

SKILLS

- Programming: Proficient in MATLAB, Python (Keras, TensorFlow), FPGA (VHDL), C++
- EDA/CAD tool: Altium Designer, Solidworks, AutoDesk CAD, Vivado/ISE Design Suite

PUBLICATIONS

Journal Papers:

- **Wang, Y.**, Tao, L., Abbaszadeh, S. and Levin C. S.*, "Novel radiation detector concept based on ionization-induced modulation of optical polarization", (Accepted), *Physics in Medicine & Biology*.
- Zhou, P., Zheng, L, **Wang, Y.**, Wu, H. and Abbaszadeh, S.*, "Automatically Detecting Bregma and Lambda Points in Rodent Skull Anatomy Images", (Accepted), PLOS ONE.
- Romanchek, G., **Wang, Y.** Marupudi, H. and Abbaszadeh, S.*, "Performance of optical coupling materials in scintillator detectors post temperature exposure", *MDPI Sensors, 20(21): 6092*.
- Li, M., **Wang, Y.** and Abbaszadeh, S.*, "Development and initial characterization of a high-resolution PET detector module with DOI", *Biomedical Physics & Engineering Express, 6, p065020*.
- Zhang, H., **Wang, Y.**, Qi, J. and Abbaszadeh, S.*, 2020. "Penalized maximum-likelihood reconstruction for improving limited-angle artifacts in a dedicated head and neck PET system", *Physics in Medicine & Biology, 65 p.165016*.
- **Wang, Y.**, Li, Y., Yi, F., Li, J., Xie, S., Peng, Q. and Xu, J.*, 2019. "Two-crossed-polarizers based optical property modulation method for ionizing radiation detection for positron emission tomography", *Physics in Medicine & Biology, 64, p.135017*.

Peer-reviewed Conference Papers:

- **Wang, Y.** and Abbaszadeh, S.*, "Detection sensitivity of optical property-based radiation detection for PET: refraction index modulation", (Accepted), *2020 IEEE Nuclear Science Symposium and Medical Imaging Conference (NSS/MIC)*.
- **Wang, Y.**, Herbst, R. and Abbaszadeh, S.*, "Back-end readout electronic design and initial results: a head-and-neck dedicated PET system based on CZT", (Accepted), *2020 SPIE Medical Imaging*.
- **Wang, Y.**, Tao, L., Xu, J. and Levin, C. S.*, "Approaches to improving the detection sensitivity of optical modulation based radiation detection method for positron emission tomography. *In 2019 IEEE Nuclear Science Symposium and Medical Imaging Conference*", (pp. 1-3). IEEE.
- **Wang, Y.**, Tao, L., Levin, C. S. and Xu, J.*, "Investigation of optical property modulation based ionizing radiation detection method for PET: two-crossed-polarizers based method", *In 2019 IEEE Nuclear Science Symposium and Medical Imaging Conference* (pp. 1-3). IEEE.
- **Wang, Y.**, Li, Z. and Xu, J.*, 2019, March. "Investigation of Pockels effect in optical property modulation-based radiation detection method for positron emission tomography", *SPIE Medical Imaging 2019* (Vol. 10953, p. 1095306).
- **Wang, Y.**, Li, Y., He, L., Shamsi, P. and Zheng, Y.R.*, 2018, March. "An energy-harvesting power supply for underwater bridge scour monitoring sensors", *SPIE Smart Structures + Nondestructive Evaluation* (Vol. 10599, p. 105990H).

Working Papers:

- **Wang, Y.**, Herbst R. and Abbaszadeh, S.*, "Development and characterization of readout circuits for a two-panel head and neck dedicated PET system based on CZT detectors", (Submitted), *IEEE Transaction on Radiation and Plasma Medical Sciences*, (Feb. 2021)

Patents:

- Xu, J., **Wang, Y.**, and Li, Y., "Optical-performance-modulation-based method and system for detecting ionizing radiation", CHN invention patent, pub. No.: CN 08693550A, (Granted), 2019-09-27.

- Peng, Q., Wu, Y., Xie, S., **Wang, Y.**, and Yuan, D., "Novel Photon measuring device and photon measuring equipment", CHN invention patent, pub. No.: CN 111694043A, (App.), 2020-09-22.

TALKS AND PRESENTATIONS

- "Back-end readout electronic design and initial results: a head-and-neck dedicated PET system based on CZT.", *2021 SPIE Medical Imaging*, San Diego, USA (Upcoming).
- "Detection sensitivity of optical property-based radiation detection for PET: refraction index modulation.", *2020 IEEE NSS/MIC*, Boston, USA (Virtual).
- "Investigation of optical property modulation based ionizing radiation detection method for PET: two-crossed-polarizers based method." *2019 IEEE NSS/MIC*, Manchester, UK.
- "Investigation of Pockels effect in optical property modulation-based radiation detection method for positron emission tomography.", *2019 SPIE Medical Imaging*, San Diego, USA.
- "An energy-harvesting power supply for underwater bridge scour monitoring sensors.", *2018 SPIE Smart Structure and Materials*, Denver, USA.

HONORS, AWARDS AND FELLOWSHIPS

- IEEE Nuclear Science Symposium and Medical Imaging Conference Trainee Grant Scholarship of 2019, 2020
- UCSC Graduate Student Travel Award of 2019
- Outstanding Undergraduate Award for Huazhong University of Sci. and Tech. (HUST) of 2018
- First-Class Academic Scholarship for HUST of 2018
- Chinese Scholarship Council (CSC) Undergraduate Scholarship of 2017

SERVICES

- Reviewer for IEEE Sensor Journal.
- Student volunteer for 2017 IEEE EMC and Signal & Power Integrity conference
- Member of IEEE Eta Kappa Nu (HKN) and student instructor for UCSC HKN chapter.