Ali Rezaei

CONTACT

Address:
Netherlands, Enschede,
Witbreuksweg 377 a 109

Postal Code:
7522 ZA Enschede

Phone:
+31639864994

Email:
a.rezaei@utwente.nl

PERSONAL PROFILE

Currently I am a PhD student at university of Twente working on controllable bubble, acoustic excitation and soft matter interaction. I am Skilled in ***signal and image processing*** in LabVIEW and MATLAB, I am also Skilled in AVR programming.

EDUCATION

- 2019, PhD student at University of Twente, Department of Physics of Fluid (POF)
- 2016 - 2019, MSc student of Photonics in Laser and Plasma Research institute in Shahid Beheshti University (SBU)
- 2012 – 2016 BSc in Atomic & Molecular Physics at Iran University of Science and Technology (IUST)

SOFWARE SKILLS

- MATLAB programming
- LabVIEW programming
- Zemax (OpticStudio)
- Electronics**,** AVR, C programming
- COMSOL Multiphysics Simulation
- SolidWorks
- Altium

SKILLS (in addition to scientific field)

- Teaching
- Experienced in workshop work (Turning, CNC, 3D Printing)

RESEARCHS

- Microfluidics and soft matter
- Photoacoustic Microscopy (PAM).
- Brain mapping through Voltage Sensitive Dye Imaging (VSDI).
- Blood flow detection through Laser Speckle Contrast Imaging.

PROJECTS

- PhD project: microbubble, acoustic cavitation and soft matter
- MSc Dissertation: Photoacoustic Signal Processing for 2D and 3D Image Reconstruction (LabVIEW)
- Design and Construction of an Electronic for VSDI System Automation.
- Image Processing in LabVIEW for Analysis of VSDI signals.
- Image Processing in MATLAB for Object Tracking.

FUTURE RESEARCH INTERESTS

- Microfluidics
- Optical Imaging
- Plasmonics
- Spectroscopy
- Fiber Sensors

LANGUAGE SKILLS

- Persian – native
- English – good

TEACHING EXPERIENCES

- 2014-2015 Teaching high school physics
- Winter 2016 Image processing by LabVIEW
- 2018-2019 Teaching Assistant, fundamental of physics I, undergraduate level
- 2018-2019 C programming for AVR projects in high school

PUBLICATIONS

Digital image registration reveals signal improvements in voltage-sensitive dye imaging of in vivo rat brain
MS Feiz, H Latifi, A Rezaei, M Karimkhan-zand - Biomedical Physics & Engineering Express, 2019.

CONFERENCES AND WORKSHOPS ATTENDED

- **the 22nd annual conference saratov fall meeting 2018**–VI symposium on optics & biophotonics, Saratov, Russia (we presented a poster in laser speckle contrast imaging)
- **Rodent Electrophysiology, Imaging and Data Analysis** Workshop, IPM (Institute for Studies in Theoretical Physics and Mathematics), Tehran, Iran.

REFRENCES

- Professor Michel Versluis, Full professor of Physics and Medical Acoustics, Physics of Fluid Group, University of Twente, Enschede, Netherlands. Email: m.versluis@utwente.nl

- Professor Hamid Latifi, Professor of Physics, Laser and Plasma Research Institute, Shahid Beheshti University, Tehran, Iran, Email: latifi@sbu.ac.ir

- Dr Mohammad Ismail Zibaei, Assistant Professor of Photonics, Laser and Plasma Research Institute, Shahid Beheshti University, Tehran, Iran, Email: m_zibaye@sbu.ac.ir

MSC DISSERTATION ABSTRACT

Photoacoustic Signal Processing for 2D and 3D Image Reconstruction:
The photoacoustic microscopy (PAM) is a method for tissue imaging. With its excellent scalability, PAM can provide high-resolution images beyond the optical diffusion limit (~1 mm in soft tissue) in comparison with conventional optical imaging systems. PAM is based on the acoustic detection of optical absorption from contrast agents, such as organic dyes and nanoparticles.
Our goal was analysing photoacoustic data for calculation of system resolution and reconstruction of two- and three- dimensional images. A 3D image of two crossing tapes was obtained. The lateral resolution was calculated 177 micrometers for our system.

Voltage Sensitive Dye Imaging (VSDI)

VSDI offers the possibility to visualize, in real time, the cortical activity of large neuronal populations with high spatial resolution (down to 20-50 μm) and high temporal resolution (down to the millisecond). With such resolutions, VSDI appears to be the best technique to study the dynamics of cortical processing at neuronal population level.
My role in this Project was synchronization of animal stimulator and high-speed camera. I designed an Electronic Box that could control camera and animal stimulator also I handled animal surgery and preparation for experiments.