Christopher Oldfield

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SUMMARY

A Biomedical Engineering Master's graduate with over 6 years of high MATLAB proficiency and several years of experience in imaging and signal processing. My master's research in advanced electro-optic (THz) tissue image analysis implies sufficient experience and aptitude for investigating large dataset biosignals in tissues, especially coupled with my background in general physiology gained from my degree courses. Additionally, my strong communication skills and experience with patented product co-development and interdisciplinary published research make me eager to interview with any opportunities in image and signal analysis.

EDUCATION

University of Arkansas, Fayetteville, AR

Master of Science in Biomedical Engineering……..*(September 2017 – July 2020)*
Bachelor of Science in Biomedical Engineering……..*(September 2014 – May 2017)*

Relevant Coursework:.....*(Additional courses on transcript)*

Biomedical Systems and Signals
Design & Analysis of Experiments
Biomedical Modeling and Numerical Methods
Differential Equations
Cardiovascular Physiology and Devices
Biomedical Data and Image Analysis
Biomedical Design I & II
Biomedical Transport Phenomena

Honors, Awards, and Patents:

Co-Inventor on Medical Device Patent #US20170333643A1 for Laparoscopic Surgery
Arkansas INBRE Research Conference 1st Place
Published Research at IEEE International Symposium on Antennas and Propagation, Boston 2018

QUALIFICATIONS

Skill (Years of Experience / Last Used / Expertise Level)

Computer Skills: MATLAB (6+/2020/Advanced), Solidworks (3/2017/Adept), JMP (1/2020/Adept), C# (1/2020/Novice), C++ (1/2014/Novice), MS Office (10+/2020/Advanced), LabVIEW (0.5/2016/Novice), AutoCAD (1/2014/Novice).

Statistical Skills: Hypothesis Testing (6/2020/Advanced), Regression (3/2020/Adept), ANOVA (2/2020/Adept), Dimensional Reduction (0.5/2018/Novice), Risk Analysis (0.5/2020/Novice), Logarithmic Regression (0.5/2020/Novice), Survival Curves (0.5/2020/Novice).

Signal Processing Skills: Fourier Analysis (3/2018/Adept), Time Domain Analysis (1/2018/Adept), Interpolation (1/2018/Adept), Convolutions (0.5/2017/Novice), Kernel Processing/Masking (0.5/2017/Novice), Digital Filtering (0.5/2017/Novice).

Biomedical Skills: Physiology (8/2020/Advanced), Cardiovascular Physiology (1/2019/Adept), Electro-Optic (THz) Tissue Analysis (1.5/2018/Advanced), ECG & ECG Signal Processing (0.5/2019/Basic), Wet Lab (3/2019/Adept), Spectroscopy (Various) (2/2019/Adept).

RESEARCH

University of Arkansas Electrical Engineering Program, Fayetteville, AR

Graduate Research Assistant……...*(May 2017 – December 2018)*

- Operated a Terahertz Imaging System to image human breast tissue and mouse tissue, both healthy and cancerous, to study the effectiveness of using Terahertz Imaging for cancer identification in excised surgical tissues. The Terahertz Imaging system is a time-domain and optical phase measurement system that uses Fourier-transformed frequency data for both material refractive index and absorption, which are inter-converted to material permittivity and permeability.
- Developed image analysis tools in MATLAB using various analytics including Fourier analysis, digital filtering, and masking, to isolate observable differences between healthy and cancerous tissues in images.
- Developed a MATLAB interpolation tool to compare non-equal discrete frequency datasets.
- Developed a MATLAB statistical tool to perform confidence interval testing on multiple large 3D frequency datasets.
- Developed solidified emulsion hydrogel tissue phantoms by using measured values for cancerous, fibrous, and fatty tissues in comparison to measurements for various phantom component materials. PCA dimensional reductions were used to objectively analyze the relative contribution of each component material in-phantom.
- Worked with cross-discipline teams of biomedical engineers, electrical engineers, and mathematicians to prepare results for scientific publications and conferences.

University of Arkansas Institute for Nanoscience and Engineering, Fayetteville, AR

Undergraduate Research Assistant……*(September 2016 – May 2017)*

- Assisted investigation into toxic membrane pore-forming protein functionality by creating and imaging giant unilamellar vesicle and lipid bilayers.
- Developed procedures to create and image the vesicles using various microscopies, including fluorescence microscopy.
- Performed occasional patch clamp experiments to analyze differences in electric potential across membranes, before and after infusing them with pore-forming proteins.

EXPERIENCE

University of Arkansas Biomedical Engineering Program, Fayetteville, AR

Graduate TA (3 semesters)…….....*(May 2017 – May 2019)*

Undergraduate TA (1 semester)……*(March 2017 – May 2017)*

- Wrote and gave the original course outline and lectures for a new introductory MATLAB lab.
- Taught a Systems and Signals lab course throughout which students created an ECG using a breadboard. The final labs included some rudimentary signal analysis of ECG measurements.
- Gave lectures to auditorium classes during professor absences, assisted students with work, and proctored tests.

CARTI, Little Rock, AR

Biomedical Engineering Intern (Temporary)…….*(September 2020 – Current)*

MEMBERSHIPS

IEEE……..(*May 2018 – May 2019)*

Nontraditional Premedical Student Organization (NPSO) Treasurer……...*(May 2018 – May 2019)*

Biomedical Engineering Society (BMES) Career Development Officer…….*(May 2016 – May 2017)*