

CANDIDA JANE MARIA USTINE

Clinical Engineer for Epilepsy Program, Biosignal enthusiast, Neuroscience Researcher

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SKILLS

Expertise

- MEG, fMRI, MRI, EEG, fNIRS, tDCS, RNS, VNS, DBS, Evoked Potentials, Resting state and Language Mapping, Neuroimaging Pain Pathway, Heart Rate Variability, Task Development, Analysis development, Coding, Patient and Physician interaction, Presentations, Report Writing, hands-on training sessions

Project Management

- Mentorship of peers, delivering scientific data to non-technical audience, collaborate with physicians, researchers and technicians on multi-site national projects, organized and executed pilot research projects in the MEG.

Clinical Care

- Educating patients for epilepsy surgery workup, delivering scientific data to physicians and patients, epilepsy patient conferences, language mapping for epilepsy patients post SEEG implant, depth electrode and grid electrodes, 3D modelling for brain surgery

Applications

- AFNI, FSL, SPM, FreeSurfer, MNE, Fieldtrip, Psychopy, Slicer, MNE-py, Brainstorm, Anaconda, E-Prime, Git, Excel, Epic, McKesson – PACS

Languages

- Python, Matlab, Bash, R

WORK EXPERIENCE:

Engineer III **Froedtert Hospital, Department of Neurology** **Jan 2018 – Present**
Epilepsy Clinical Program

- Conduct clinical MEG protocol for epilepsy patients including resting and task data acquisitions.
- Ensure patient safety and educate them about the imaging procedures and technical aspects.
- Generate high-quality patient specific source models for epilepsy localization.
- Design and develop signal processing pipelines for clinical MEG and EEG data.
- Generate patient report and validate task results with epileptologists.
- Create 3D models of patient brain volumes with SEEG electrodes for surgical planning for surgeons and epileptologists.
- Participate in weekly patient conferences and present data analyses to the epilepsy team comprising neurosurgeons, epileptologists, psychologists and technologists.

Imaging Brain Connections in Pelvic Pain

- Worked on MRI, fMRI and DTI data collected from healthy controls and patients with chronic pelvic pain.
- Preprocessed structural and functional data using AFNI, FSL, and SPM.
- Traced micro-structures from T1 MRI data collected from 3T and 7T scanners using FreeSurfer and AFNI.
- Performed group level functional and structural connectivity analyses using FSL, AFNI, SPM, and Matlab.
- Worked on Heart Rate Variability and Valsalva maneuver data collected from patients in MRI scanner.
- Prepared scientific data for publications, posters, submitted abstracts and presented at conferences.

Engineer II **Medical College of Wisconsin, Froedtert Hospital, Department of Neurology** **Jan 2014 – Jan 2018**
MEG Research Program

- Interacted with clinical and research faculty to develop research questions, designed experiments.
- Interacted with healthy controls and patients, prepared subjects for MEG/EEG data acquisition, which involves EEG electrode placement, head digitization using the Polhemus, de-magnetization when necessary.
- Performed data acquisitions, troubleshooted acquisition related issues, interacted with Elekta representative for fine-tuning data acquisitions.
- Performed data analysis including preprocessing, source level analyses, connectivity analyses and time frequency analyses.
- Interacted with physicians and researchers regarding MEG grants and prepared data for new grant submissions.

Epilepsy Connectome Project

- Designed and developed MEG research paradigms and experimental protocols in psychopy and matlab.
- Performed data collection of simultaneous EEG, MEG and fMRI recordings.
- Interacted efficiently with epilepsy patients, researchers, physicians, and the health care community.
- Constructed data processing and analyses pipelines in Python and Matlab. Developed a standalone code base for MEG data processing in Python.
- Constructed streamlined pipelines to perform functional connectivity analyses on resting state fMRI data in Matlab using FSL, AFNI, and Connectome Workbench.
- Preprocessed and analyzed MEG/EEG and fMRI data, preparing data for conferences and abstract submissions.

**Research
Technician II**

**Massachusetts General Hospital
Athinoula A. Martinos Center for Biomedical Imaging**

Aug 2011 – Jan 2014

- Performed MRI and MEG data acquisitions and interacted independently with schizophrenia patients.
- Programmed and streamlined EEG-MEG, MRI and fMRI analyses for projects.
- Developed an artifact correction algorithm for MEG and EEG datasets.
- Designed and coded a visualization algorithm for fMRI activations on brain surface.
- Responsible for testing, maintenance and repair of lab equipment.
- Interacted with the IRB, prepared NIH progress reports and grant proposals, and participated in conferences.

**Project Support
Specialist**

**Research Foundation of SUNY Upstate Medical University
Department of Neuroscience**

June 2010 – July 2011

- Supervised and conducted image acquisitions from multiphoton and confocal microscopes.
- Developed an automated system to quantify the branch angle extension & retraction velocities of dendrites.
- Guided and trained graduates and undergraduates in neuroimaging software and Matlab.
- Proposed an automated 3D visualization prototype of the traced neurons in extracellular space.

**Research
Assistant**

**Cornell University
Department of Biomedical Engineering**

Dec 2009 – May 2010

- Developed an automated algorithm that segments body surface from CT scans for needle-guided biopsies.
- Developed a 3D visualization of body surface from segmented 2D data sets (CT scans).
- Programmed a system to automatically segment kidneys from low dose CT scans.

EDUCATION:

Cornell University, Ithaca, New York
Master of Engineering - Electrical and Computer Engineering

May 2010

Anna University, Chennai, India
Bachelor of Engineering - Electronics and Communications Engineering

May 2009