Rinu Sebastian

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Education

University of Southern California (USC), Los Angeles *Jan. 2017 – Dec. 2018*
Master of Science in Electrical Engineering

Mahatma Gandhi University (MG University), Kerala, India *Aug. 2009 – May 2013*
Bachelor of Technology in Electronics & Communication Engineering

Research Experience

Dept. of Neurosurgery, Keck School of Medicine of USC *Aug. 2018 – Present*
Advisors: Dr. Brian Lee & Prof. Spencer Kellis

- Tested and devised Blackrock Cerestim R96 macroelectrode neurostimulator clinical setup at KSOM , implemented task design and GUI for clinical brain stimulation
- Developed algorithm to detect speech time-stamp for analyzing the neural signal - speech correlation in Stroop task
- Implemented IIS (inter-ictal spikes) detection method to weed out abnormal trials
- Involved in neural and behavior data collection, managing data pre-processing pipeline and enhancing signal analysis tools.
- Investigating the relation between cortical stimulation artifact and spatial distance between the stimulation site and the recording sites for effective connectivity study of brain in epilepsy patients.

The Saban Reseach Institute at Children's Hospital Los Angeles *May 2018 – Dec 2018*
Advisor: Prof. Natasha Lepore

- Incorporated iterative curvature based interpolation (ICBI) approach and improved the quality of low rank total variation (LRTV) algorithm on super-resolved MRI volume by 5%.
- Reviewed computational algorithms to enhance low-resolution MRIs to detect and segment lesions in 200 children with sickle cell disease.

Brain Body Dynamics Lab *May 2017 – Aug. 2017*

- Explored relationship between bio signals (EEG and EMG) generated while subjects exerted force on test objects (spring, dowel) and observed non-existence of correlation between signals and force.

Publications

Gamma-Band Modulation in the Human Amygdala during Reaching Movements
Roberto Martin del Campo-Vera, Angad S. Gogia, Kuang-Hsuan Chen, **Rinu Sebastian**, Daniel R. Kramer, Morgan B. Lee, Terrance Peng, Ali Tafreshi, Michael F. Barbaro, Charles Y. Liu, Spencer Kellis, and Brian Lee.
Status: Published in the Journal of Neurosurgery Focus 132 (4), 35-35

Beta-Band Power Modulation in the Human Hippocampus during a Reaching Task
Roberto Martin del Campo-Vera, Angad S. Gogia, Kuang-Hsuan Chen, **Rinu Sebastian**, Daniel R. Kramer, Morgan B. Lee, Terrance Peng, Ali Tafreshi, Michael F. Barbaro, Charles Y. Liu, Spencer Kellis, and Brian Lee.
Status: Published in the Journal of Neural Engineering

Beta-Band Modulation in the Human Hippocampus during a Conflict Response Task
Kuang-Hsuan Chen, Angad S. Gogia, Roberto Martin del Campo-Vera, **Rinu Sebastian**, Morgan B. Lee, Daniel R. Kramer, Terrance Peng, Ali Tafreshi, Michael F. Barbaro, Charles Y. Liu, Spencer Kellis, and Brian Lee.
Status: Manuscript under review the Journal of Neural Engineering

Teaching Experience/ Presentations / Posters

- Co-authored 2 posters selected for 2019 SFN Conference
  a) **Neuromodulatory assessment of depth-EEG oscillations in reaching arm movements**
  Roberto Martin del Campo-Vera, Kuang-Hsuan Chen, **Rinu Sebastian**, Daniel R. Kramer, Spencer Kellis, and Brian Lee.
  b) **Sub-cortical human brain modulation during response conflicts in a modified Stroop task**
  Kuang-Hsuan Chen, Roberto Martin del Campo-Vera, **Rinu Sebastian**, Daniel R. Kramer, Spencer Kellis, and Brian Lee.
- Presented modified LRTV algorithm during 2018 CHLA Summer Internship Presentation Series
- Conducted one day workshop on Python and image processing applications for IEEE FISAT student members in 2013.

Industrial Experience

Tata Consultancy Services Ltd. *Jan. 2014 – Oct. 2016*
Performance Test Engineer

- Conducted performance testing of middleware and frontend layers of an e-commerce platform, investigated test run results to identify bottlenecks, hosted meetings to rectify defects.
- Led a project team of 5 engineers to plan and estimate resources for testing activities and improved average time for load and performance planning by 30%.

Skills

- Languages: Python, C++, C
- Application Packages and Libraries:: Matlab, GNU Octave, Scilab, EEGLab, FSL, BrainSuite, Chronux, SVN, Git, AWS, Google Cloud, HP LoadRunner, HP Analysis, Eclipse, Visual Code Studio, LaTeX, OpenCV, Tensorflow

Scholarships

M.G.University
AICTE (All India Council for Technical Education) Fellowship (8 semesters) *Aug. 2009 - May 2013*

Honors and Achievements

- Winner, IEEE Xtreme Coding Challenge(M.G.University) *2012*
- Winner, R10 (Asia-Pacific zone) IEEE Ethics *2011*

Leadership/ Service

- **Organizing Chair:** Drafted the winning proposal for the 1st combined all Kerala student congress (AKSC) - Women in Engineering (WIE) conference, structured the master-plan, speakers, budget and schedule to host around 30% of the IEEE Kerala Region Student population (350+ students)
- **Co-ordinator:** Organized student teacher and researcher (STAR) program in Adam Public School (Mookkanoor, Kochi) as a part of science, technology, engineering and mathematics (STEM) outreach project

Membership in Professional Student Bodies

- IEEE (2009-2013), WIE (2010 - 2013), FISAT Free Software Cell (2010 - 2013)

Curriculum vitae (CV) updated on June 23, 2020