

# SHAILAJA AKELLA

✉ [shailaja1093@ufl.edu](mailto:shailaja1093@ufl.edu)

🌐 [shailaja-akella](https://www.linkedin.com/in/shailaja-akella)

📄 [github.com/shailajaAkella](https://github.com/shailajaAkella)

🌐 [shailajaAkella.github.io](https://shailajaAkella.github.io)

## SUMMARY

Motivated researcher with 4+ years of experience in applying signal processing, statistical modeling, optimization and machine learning techniques to build advanced algorithms for analysis of large time-series data.

## RESEARCH EXPERIENCE

### Graduate Research Assistant

#### Computational NeuroEngineering Lab

(Aug 2017 – Dec 2021)

- Designed a generative unsupervised sparse coding framework using K-SVD to model the complex dynamics of electrophysiological recordings at a high-time resolution
- Designed a robust feature extraction pipeline using hypothesis testing to identify neural features of behavior from brain field potentials for an accurate prediction of subject intent (avg. 90% across 11 sessions in 3 subjects)
- Employed information-theoretic causality measures to construct brain connectivity maps using neural spiking and field potential data

### Research Intern

#### Analog Devices, Inc.

(July 2015 to July 2016)

- Designed a predictive model using Kalman filter for offset correction of MEMS gyroscopes and successfully demonstrated 95% accuracy on a Cortex M0 Processor
- Developed a software architecture to reduce the testing time of MEMS gyroscopes by 30% and enumerated limitations in terms of the model, parameters, and design.

## KEY SKILLS

**Programming Tools:** MATLAB, Python, C, C++, R, Java, HTML, CSS, LaTeX, and EEGLAB

**Deep Learning Frameworks:** TensorFlow, Caffe

**Data Handling:** Denoising (cleaning and anomaly detection), data mining, and analysis of large-scale electrophysiological datasets (field potentials, ECoG, EEG, and MEG).

## EDUCATION

University of Florida, Gainesville, FL

Aug 2017 - Dec 2021

M.S., Ph.D., Electrical and Computer Engineering

GPA: 3.75/4.0

Birla Institute of Technology and Science – Pilani Aug 2011 – May 2016

M.Sc. Mathematics, B.E. Electrical & Electronics Eng.

GPA: 7.9/10.0

## MACHINE LEARNING EXPERIENCE

### ML Projects

- Experimental Analysis on Deep Generative Models - VAEs and GANs (Fashion MNIST)
- Unsupervised Shift Invariant Dictionary Learning (DL) - Convolutional & Circulant DL structures (Standard images)

### ML Algorithms

**Supervised:** SVM, (R, C, D) - neural networks, linear & logistic regression, K-NN, decision trees, generalized linear models.

**Unsupervised:** Mixture models, Gaussian mean shift, K - means, DBSCAN

**Sparse Coding/Approximation:** Orthogonal matching pursuit, basis pursuit, KSVD, convolutional sparse coding

**Dimensionality Reduction:** (K) LDA, (K)PCA, t-SNE, Autoencoders

## COURSEWORK

Computational neuroscience, neural signal processing, adv. machine learning, machine learning in time series, neural networks and deep learning, adv. stochastic methods

## PUBLICATIONS:

**Marked point process representation of oscillations in working memory.** Akella, S. et al, Journal of Neural Engineering.

**Correntropy based Robust Decomposition of Neuromodulations.** Akella, S. et al, IEEE Engineering in Medicine and Biology Society (EMBC)

## LEADERSHIP:

**Teaching Asst.:** Neural Networks and Deep Learning

**Tutor:** Nirman, Goa Chapter (Non - profit organization)