Work Experience

Stanford University - Graduate Research Assistant

Poldrack Lab, Stanford University, USA   May'19 - present

- Developing Deep Learning (**3D CNN**) based algorithms for MRI quality control
- Developed techniques to address **class imbalance (9:1)**
- Optimized framework for prediction from **20 min to 0.7 sec**

Siemens - Deep Learning Research Scientist

Siemens Bangalore, India   Dec'18 - May'19

- Developing Deep Reinforcement Learning and neuro evolutionary algorithms for **autonomous drone navigation**
- Developed new techniques for addressing exploration vs exploitation, pushing the state-of-the-art on a handful of simulation environments

IITM - Computational Neuroscience Researcher

CNS Lab, IIT Madras   April'18 - Oct'18

- Developing Oscillatory **Neural Field Model** (NFM) to understand the functioning of the brain and its behavior
- Developed a new **mathematical model** for a neuron for understanding the excitation and inhibitory behaviour of FN
- Presented paper at **ICONIP** conference 2018

UMich - Computational Neuroscience Researcher

Chandra Sripada's Lab, UMich   Feb'18 - April'18

- Developed **3D CNN** based algorithm to identify depression using brain **sMRI** data with **64% accuracy (view project)**
- Implemented 2D CNN for Fetal brain segmentation using **fMRI** data with **96%** of dice **(view project)**

IITM - Medical Imaging Researcher

MIRL Lab, IIT Madras   May'17 - Present

- Developed tools for Bidirectional CT2MR conversion (work submitted to **MIML MICCAI'19**)
- Developed zero-shot learning based deep learning technique for image registration (work submitted to **MIML '19**)
- Developed algorithms for brain tumor segmentation (work presented at **MICCAI '18**)

Achievements

Ad hoc reviewer IEEE Transition in neural networks and learning systems
1st position among *500+* teams, in deep learning-based surgical tool annotation challenge, hosted by MICCAI'18
1st position among *300+* teams, in Combined Radiology and Pathology Classification Challenge, hosted by MICCAI'18
4th position among *500+* teams, in automatic Diabetic Retinopathy Grading, using Deep Learning, hosted by ISBI'18 (by using **1%** of actual data)
1st position among *8000+ teams*, IndiaHacks'17 Fintech Domain
1st position in Global Fintech Hackcelerator'17 Singapore
1st position among *150+ teams*, Code.fun.do 2016

Skills

- **Data Analytics**: Keras OpenCV
- **Web Dev** : django HTML
- **Others :** C, ROS, Arduino, Git

🌐 koriavinash1.github.io
🐦 koriavinash001
🐙 koriaviansh1   in koriavinash1
🎯 To analyze and create tools inspired by nature, as an AI research scientist, computational neuroscientist and biomedical datascientist

Education

B.Tech+M.Tech, Biomedical Engineering Design
2015 - 2020 (expected), CGPA: **8.12/10**
Indian Institute of Technology Madras

Courses **B**rain Research & Machine Intelligence
Reinforcement Learning
Applied Time Series Analysis
Industrial Mathematical modelling
Nonlinear Optimization
Machine Learning and Applications
Analysis of Finite Elements
Principles of Medical Image Analysis

Key Course/Personal Projects

Mathematical Modelling in Industry Aug'18 - Dec'18
Developed various mathematical models on traffic control, image filtering and trade data **(view project)**

Analysis of Inverse Reinforcement Learning
Conducted experimental analysis on IRL&RL **(view project)**

Algorithms on Stock Price Prediction
Stock price predictions using recurrent neural networks, with less than **5% prediction error (view project)**

Dynamic Regularizer with an informative prior
Informative prior based regularization for deep neural networks (work submitted to **OPT**, **Neurips 2019**)

Invited Poster/Presentation

CATARACT EndoVIS 2018 MICCAI - "Winning algorithm for automatic surgical tool detection"

CRPC MICCAI'18 - "Winning algorithm for an automatic radio histopath disease classification"

BraTS'18 MICCAI - poster presentation for automated brain tumor segmentation

ICONIP'18 - "To present the modified fitzhugh nagumo system for an improved neuronal behavior"

Key Publications

Kori A, et.al. Ensemble of Fully Convolutional Neural Network for Brain Tumor Segmentation from Magnetic Resonance Images. InInternational MICCAI Brainlesion Workshop 2018 Sep 16 (pp. 485-496). Springer, Cham.

Kori A, et.al. Phase and Amplitude Modulation in a Neural Oscillatory Model of the Orientation Map. International Conference on NeuralInformation Processing 2018 Dec 13 (pp. 215-226). Springer, Cham.

Kori A, et.al. A Combined Radio-Histological Approach for Classification of Low Grade Gliomas. InInternational MICCAI Brainlesion Workshop 2018 Sep 16 (pp. 416-427). Springer, Cham.

MICCAI: Medical Image Computing and Computer Assisted Intervention, **ICONIP**: International Conference on Neural Information Processing, **NeurIPS:** Neural Information Processing Systems