

# ANIRBAN NANDI, PH.D.



» » Computational Neuroscientist with Ph.D. in Electrical Engineering. Expertise in a diverse range of topics including data analysis, systems modeling, optimization, stochastic processes, and machine/deep learning. Software development skills with proficiency in Python, R, MATLAB, learning frameworks - Keras, TensorFlow, PyTorch, scikit-learn, and High Performance Computing.

## » » » EXPERIENCE

### Scientist 1

Allen Institute for Brain Science, U.S., 2018- now

- » Developed a configurable, automated multiobjective optimization framework based on evolutionary algorithms to fit neuron models constrained by multi-modal data.
- » Used unsupervised learning techniques (UMAP, t-SNE) to reveal structures in high-dimensional neural (physiology, morphology and genomic) data.
- » Large scale computer simulation of biophysically realistic networks of neurons.

## » » » EDUCATION

### Ph.D., EE, GPA : 3.95

Washington University in St. Louis, U.S., 2012-17

- » Designing optimal control strategies to emit desired spiking activity in neural networks (Dynamical systems, Optimization, Kalman filtering, Dynamic programming).
- » Control analysis and design for stochastic models of neural spiking (Stochastic modeling, Maximum Likelihood Estimation, Optimization).
- » Analyzing locust olfactory circuit experimental data to infer latent decision making models (Data analysis, Unsupervised learning, Optimal control, Generative models).

### B.E., EE, GPA : 4.0

Jadavpur University, India, 2008-12

- » Project : A PC Sound Card Based Interface for Transducer Signals.
- » Internships at Optimal Power Synergy India Pvt Ltd., Indian Oil Corporation Limited.

## » » » AWARDS AND TALKS

- » Central Sector Scheme of Scholarship for College and University Students (2008-12), Ministry of Human Resource Development, Government of India
- » Team talk: "Enlightening the Chandelier" at Allen Institute Showcase, Seattle, WA, USA, November 2019.
- » Langenhop Lecture and SIU Mathematics Conference, Southern Illinois University, Carbondale, USA, May 2017.

## » » » SELECTED PUBLICATIONS (FULL LIST )

- [1] A. Nandi et al, Cellular models linking electrophysiology, morphology and transcriptomics across cortical cell types (Submitted, 2020).
- [2] A. Nandi et al, Optimal Control for Fast, Accurate Threshold-Hitting; SIAM Journal on Control and Optimization (2019).
- [3] A. Nandi et al, Control analysis and design for statistical models of spiking networks; IEEE transactions on control of network systems (2017).

## » » » TEACHING / MENTORING

- » Served as Teaching Assistant for 4 different graduate level courses and mentored MS student Jianmo He at Washington University in St. Louis.

## » » » PROFESSIONAL MEMBERSHIPS / SERVICES

- » Memberships with Institute for Electrical and Electronics Engineers (IEEE), Society for Neuroscience (SFN), Reviewer for Automatica (2015-16).

## CONTACT

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anirban-nandi

## FIELDS

Software Development

Data Analysis, A/B testing

Machine/Deep Learning

Computational Neuroscience

High Performance Computing

Stochastic Modeling

Optimization & Control Theory

## TECHNICAL SKILLS

Python, R, MATLAB, NEURON

Keras, TensorFlow

PyTorch, scikit-learn

SQL, Spark

sqlalchemy, pandas

HTML, CSS

AWS EC2, S3

## TOOLS

Terminal Git

Docker, Ansible

QtDesigner, PyQt

Matplotlib, Mayavi, Seaborn

Inkscape LaTeX

## OPERATING SYSTEMS



## ACTIVITIES

