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 unsupervized 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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anirban6908

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
- 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