



Postdoctoral Researcher in Scientific Machine Learning and Computational Biology

Maddu Lab @ Johns Hopkins University

The Maddu Lab in the Department of **Applied Mathematics and Statistics** and **Data Science and AI Institute (DSAI)** at Johns Hopkins University (JHU) is seeking a highly motivated **postdoctoral researcher** interested in developing theoretical frameworks and computational methods at the interface of **scientific machine learning, biophysics, and computational biology**.

The Maddu Lab integrates first-principles biophysical modeling with modern ML/AI techniques to build predictive, mechanistic models of complex biological processes from sparse, noisy, and high-dimensional data. Complementarily, we use concepts from statistical physics and dynamical systems theory to develop theoretical frameworks for understanding the behavior and learning dynamics of large AI models, with an emphasis on *interpretability, robustness, and generalization*.

The Maddu Lab emphasizes the judicious development of theory- and physics-guided ML/AI tools to enable scientific discovery in the life sciences and medicine.

The postdoctoral researcher will have substantial flexibility in shaping their research program, with potential projects including: (i) Biophysical and mathematical modeling of intracellular and intercellular processes; (ii) Learning spatiotemporal dynamical models from time-series and snapshot data; (iii) Theory of learning in physics-informed neural networks; (iv) Biophysically informed sequence-to-function models.

Candidate Background: Candidates must hold a Ph.D. (or equivalent doctoral degree) in applied mathematics, statistics, physics, computer science, computational biology, or a related field by the start date. Strong mathematical and computational skills are desirable. Expertise in one or more of the following areas would be particularly relevant: *scientific machine learning, biophysical modeling, statistical learning theory, generative modeling, computational biology, or bioinformatics*.

How to apply Interested candidates should submit the following materials by email to **Prof. Surya Maddu** (smadduk1@jh.edu): (1) a **CV**, (2) a brief **statement of research interests**, and (3) contact information for **2–3 references**. In the research statement, candidates are encouraged to describe which of the research directions above most closely aligns with their interests and to propose related questions they would be excited to pursue. **Applications will be reviewed on a rolling basis until the position is filled.**

We welcome applications from candidates with diverse academic backgrounds and research experiences. JHU offers competitive compensation, comprehensive benefits, and a highly collaborative research environment. **This is a fully funded two-year postdoctoral position. The position is available immediately, with a flexible start date.** The position will be based at the *DSAI* and will provide opportunities to interact with researchers across applied mathematics, data science and AI, life sciences, and medicine.