Faculty Name:

Pierre Gentine

Faculty Email:

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Lab:

Learning the Earth with AI and Physics

Project Title:

Learning the Earth with AI & Physics REU Program

Description:

Climate model predictions are full of uncertainty. Some of it is because processes like cloud formation are crudely represented simply because they are too computationally intensive to model explicitly. Multi-scale climate models that embed small realizations of these explicit physics provide an opportunity to sidestep Moore's law, by learning these physics with machine learning models. Once trained, the machine learning models can be coupled to the climate predictions, with fast inference allowing high-resolution physics in climate simulations ahead of schedule. An open research challenge is finding reproducible, reliable ways to achieve performant ML workflows in situations of real-world operational complexity. In this context, LEAP has innovated a ML training data set harvested from a state-of-the-art climate simulator, which exposes REU students to the relevant pipeline issues in a real-world research setting at the frontier of climate science and data science.

Location of Research:

Hybrid (both Remote and On-Site)

# of hrs/week:

15

Department/Program:

Earth and Environmental Engineering

Eligibility:

BS, Second Year, BS, Third Year, BS, Fourth Year

To apply, please contact:

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