SciML

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It is a repository to experiment Scientific Machine Learning (SciML) in simulating physical dynamics, understanding machine learning pros and cons in scientific computing, and discovering physical rules using the data-driven and physics-based method.

The fundamental crux of the project is to solve a variety of differential equations with machine learning.

We studied the following physical phenomenons:

1. Pendulum

2. Spring Mass

3. Wave Propagation

4. Poisson

5. Lorenz

with the following SciML models:

PHYSICS INFORMED NN PINN

Link: https://nips.cc/

NEURAL ODE (NODE)

UNIVERAL DIFFERENTIAL EQUATIONS (UDE)

HAMILTONIAN NEURAL NETWORK (HNN)

Hamiltonian fundamentals:

Link: http://www.scholarpedia.org/article/Hamiltonian_systems

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