**Using Reservoir Computing to Learn Chaotic Systems**

**1. Introduction**

Goal:  
Use machine learning (specifically reservoir computing) to learn how chaotic systems behave from observing their data.

Case studies: The Lorenz system

**2. Reservoir Computing Explanation**

Lyapunov’s exponential def

Reservoir Computing: RNNs, short term predictions, attractor climate

**3. Example: Lorenz System Mathmatical explanation + Experiment**

Eg: Trained the reservoir on Lorenz data.

Used it to predict future behavior.

Compared its output to the real system.

Dear Sandy,

Thank you for sending the project outline. Assuming that you will actually write code for these simulations, then having two examples is too much. Especially, writing code to simulate the dynamics of the KS system is not trivial. I suggest to keep only the example of the Lorenz system. A good description of the method, quality code for simulating the dynamics, training the reservoir and predicting future dynamics, and a heuristic explanation of how / why this works, will be more than sufficient for this course project. Please let me know if you have any questions or concerns.

Best regards,

Konstantinos