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Phase Space Prediction Model Using Neural Networks

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Abstract: A new nonlinear prediction technique is proposed by feedforward neural network, the learning algorithm for network is a chaotic one. A time-delay embedding is used to reconstruct the underlying attractor, the prediction model is based on the time evolution of the topological neighboring in the phase space, the spatial neighbors are chosen by the rate of exponential divergence of close trajectory. The model is tested for the Mackey-Glass delay equation and Lorentz equations, good results are obtained for the prediction.

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