

Comparative Analysis of Autoencoder Architectures for Model Order Reduction of Dynamical systems

Model order reduction (MOR) techniques are essential for reducing the computational cost associated with complex dynamical systems, and autoencoders have emerged as a promising tool for constructing efficient reduced-order models. This work investigates the comparative performance of various autoencoder architectures in representing the latent space of dynamical systems. By evaluating their ability to capture the essential dynamics, this study aims to identify the most suitable autoencoder designs for MOR, facilitating faster and more efficient simulations.

The primary objective of the ongoing research is to assess the efficiency of the different autoencoder architectures in the construction of a representative latent space reduction for responses of dynamical systems.

Tasks:

- Literature survey on the state-of-the-art autoencoder architecture for model order reduction of dynamical systems.
- Implementation of potential autoencoder architectures.
- Comparative analysis of results obtained from the proposed techniques.
- Documentation and presentation of results.

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References

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[2] <https://doi.org/10.1016/j.cma.2021.114181>