

# Ordinally Partitioned Echo State Networks

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# Agenda

- ▶ Introduction to Echo State Networks
- ▶ Introduction to Ordinal Partitions
- ▶ Research Proposal
- ▶ Implementation
- ▶ Testing and Evaluation
- ▶ Results and Analysis
- ▶ Conclusion and Upcoming Work

# Echo State Networks

Reservoir computing

# Echo State Networks

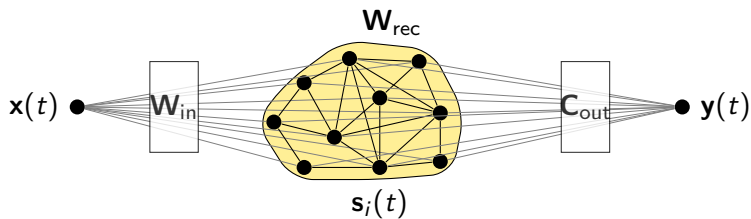
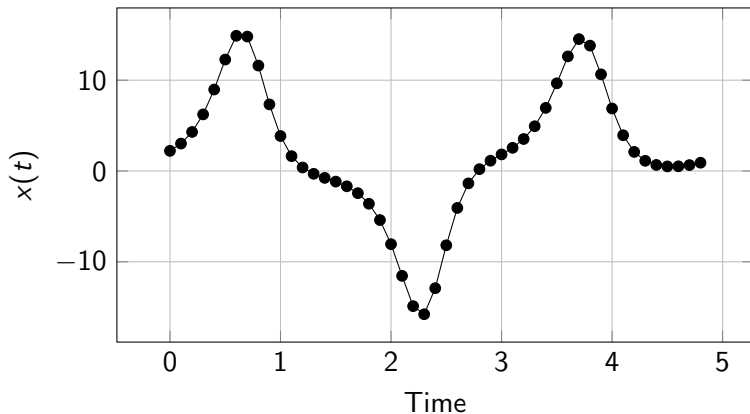


Figure: A diagram of an Echo State Network.

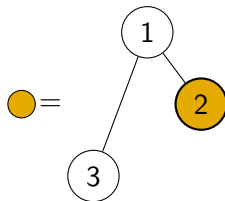
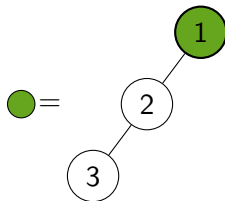
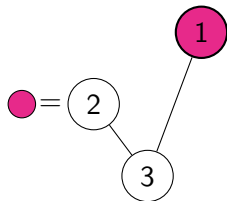
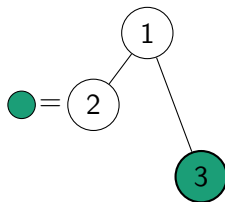
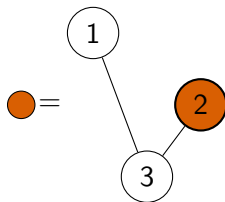
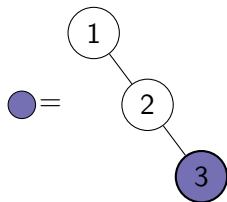
# Ordinal Partitions

- ▶ Each point in a timeseries is categorised by the ranking of its preceding points.

Lorenz Attractor:  $x$ -component

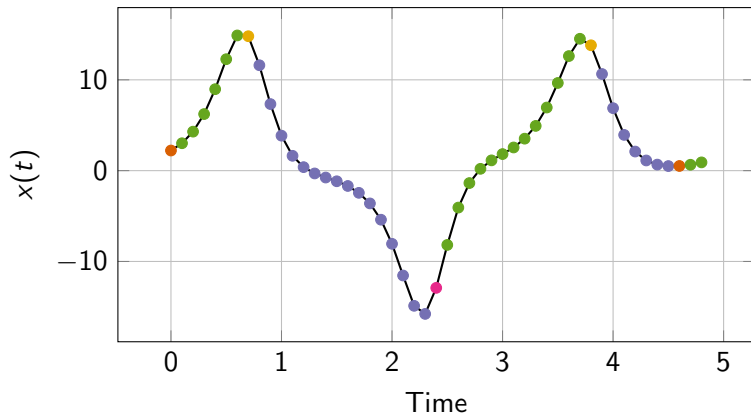


# Ordinal Partitions



# Ordinal Partitions

Lorenz Attractor:  $x$ -component



# Research Proposal

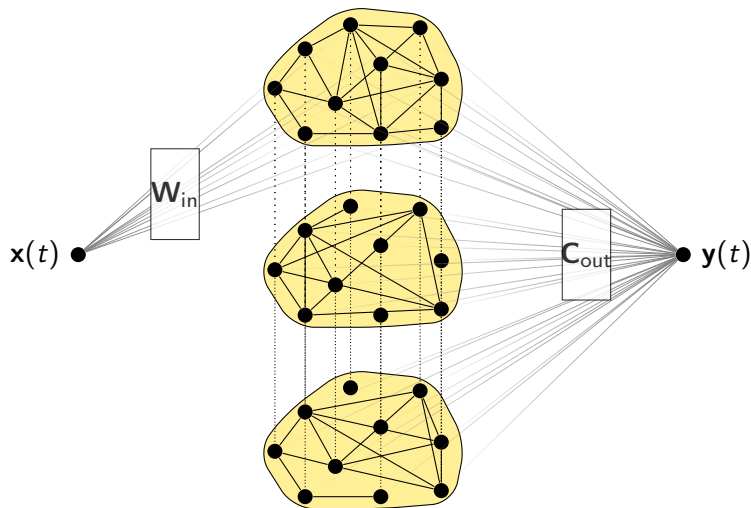


Figure: Ordinally Partitioned Echo State Network.