Feature Reduction in Time Series

Autonomous Multisensor Systems Group
Institute for Intelligent Cooperating Systems
Faculty of Computer Science
Otto von Guericke University, Magdeburg

Team Members: Debapriya Roy, Shweta Bambal

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Contents

- ❏ **Feature Reduction/Dimensionality Reduction :** process of reducing the number of input variables (features) in a dataset.

- ❏ A crucial step in the **data preprocessing** for machine learning.

- ❏ Primary goal - **simplify the dataset** while retaining its **essential characteristics.**

- ❏ **Ex: Weather Dataset (Temp, Humidity, Dew point, Rainfall, Wind Speed, Weather Type)**
  - ❏ **Humidity** and **Dew point** are highly correlated.
  - ❏ Remove **Dew point** feature.
  - ❏ Predict **Weather Type as Sunny, Rainy or Foggy** based on other features.

1 dimension: 10 positions

2 dimensions: 100 positions

3 dimensions: 1000 positions!

Figure 1 : Feature Reduction

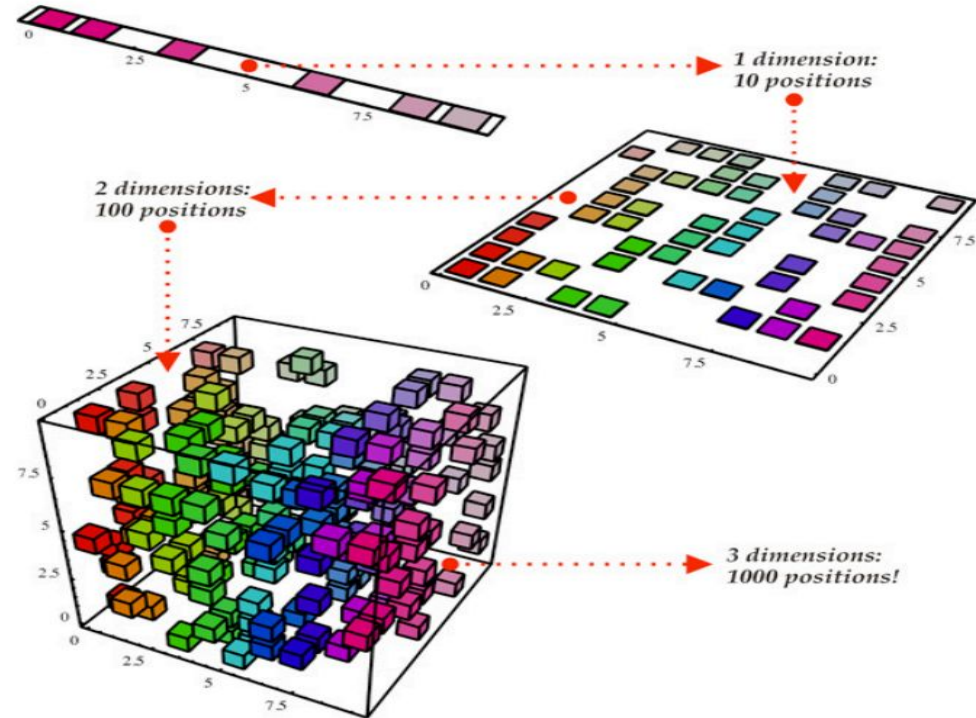https://deepai.org/machine-learning-glossary-and-terms/feature-reduction

Benefits of Feature Reduction

1. Improves Model Performance

2. Reduces Training Time

3. Improves Accuracy and Generalization

3. Better Data Visualization

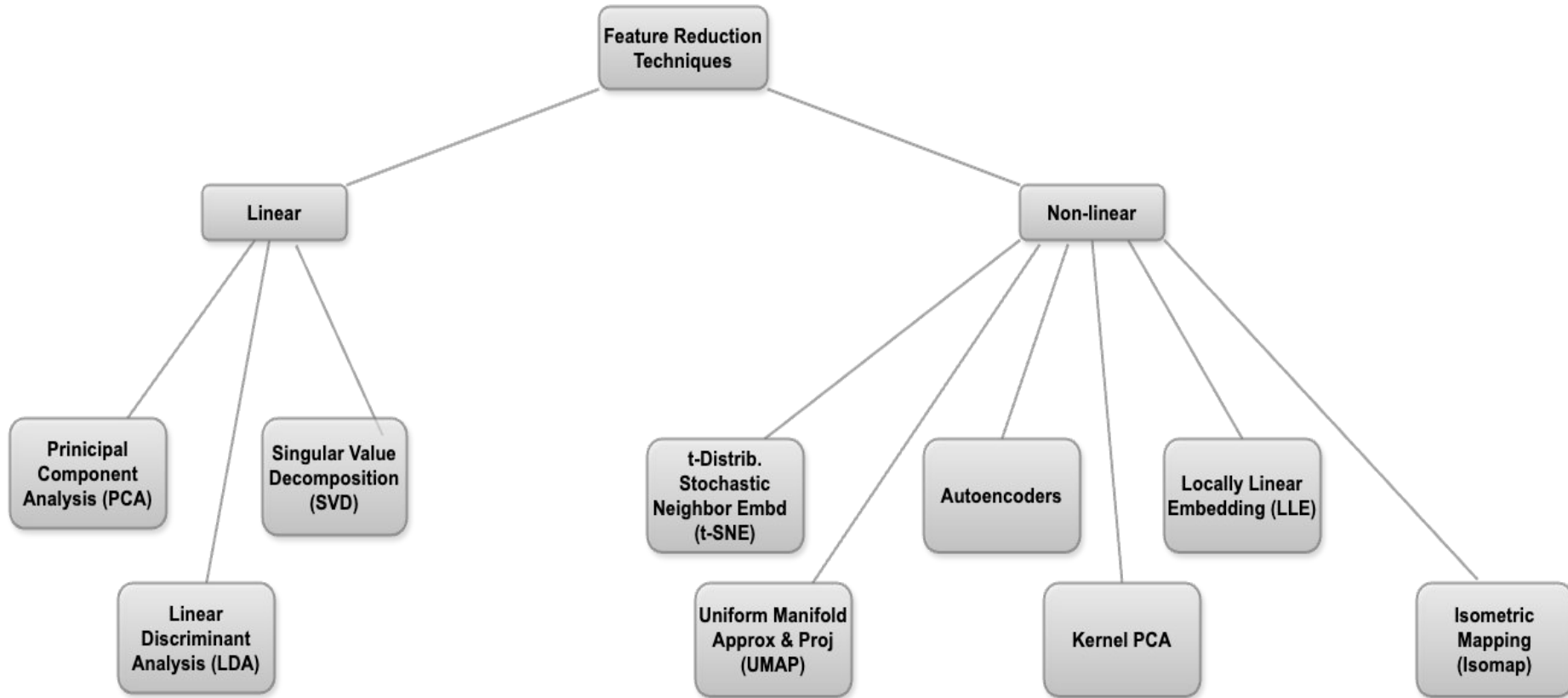3. Enhanced Model Interpretability

https://deepai.org/machine-learning-glossary-and-terms/feature-reduction

Figure 2 : Popular Feature Reduction Techniques

Project Timeline

Project Phase	Apr-25		May-25				Jun-25				Jul-25				Aug-25			
	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4
Literature review	■	■	▨	▨														
Research Paper Gathering		■	■	▨														
Summarizing LR					▨	▨												
First Report Draft					▨	▨												
Deciding Implementation Method						▨	▨											
Implementation							▨	▨	▨	▨								
Evaluation of Performance											▨	▨						
Second Draft												▨	▨					
Final Report Writing													▨	▨	▨	▨		
Final Draft															▨	▨	▨	
Review and Submission																	▨	▨

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Thank You For Your Attention!

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