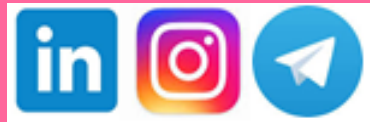


Machine Learning 8

Dimension Reduction Feature Selection (Theory)



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Data Processing Steps (Machine Learning)

- Data Cleaning
 - Missing Values, Noise, ...
- Data Scaling
 - Normalization, Standardization, Registration, ...
- **Dimensionality Reduction**
 - **Feature Selection, ...**
- Modeling
 - Classification, Regression, ...

<https://machinelearningmastery.com/dimensionality-reduction-algorithms-with-python/>



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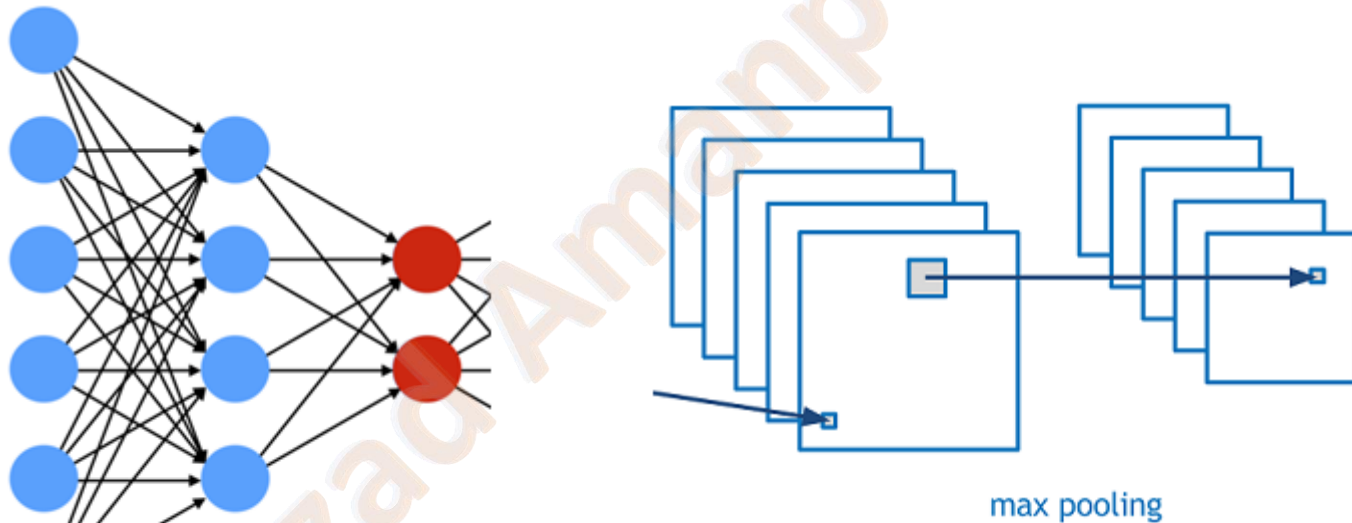


- Feature Selection
- Feature Combination / Extraction.





Dimension Reduction



<https://towardsdatascience.com/covolutional-neural-network-cb0883dd6529>

[https://medium.com/autoencoder-for-anomaly-detection in Robotics: A Review](https://medium.com/autoencoder-for-anomaly-detection-in-Robotics-A-Review)



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Dimension Reduction

There are many dimensionality reduction algorithms
and
no single best algorithm!

<https://machinelearningmastery.com/dimensionality-reduction-algorithms-with-python/>





Dimension Reduction (Methods)

Unsupervised:

- Removing Features with Low Variance
- Matrix Factorization Algorithms (PCA, SVD, ...)
- Manifold Learning (Isomap / Spectral Embedding, ...)
- ...

Supervised:

- Univariate Feature Selection
- Model-based Feature Selection
- Sequential Feature Selection / Elimination
- ...