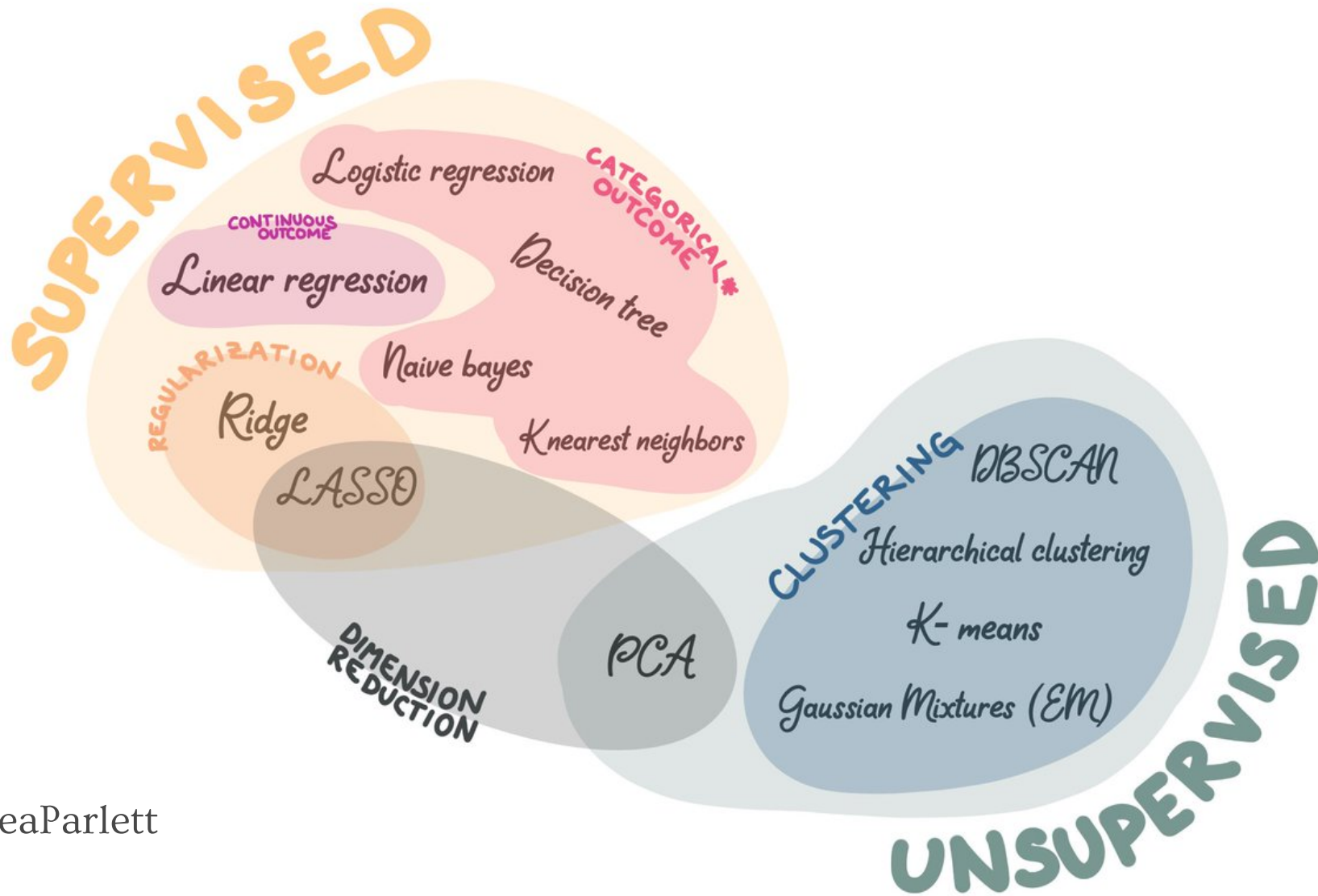


# Final Review

AU STAT627

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# Unsupervised Learning

**dimensionality  
reduction**

**Clustering**

# Dimensionality Reduction

We looked at

- Principle Component Analysis

Other methods to consider

- t-distributed Stochastic Neighbor Embedding (t-SNE)
- Autoencoder
- UMAP
- NNMF

# Dimensionality Reduction

We looked at

- Principle Component Analysis
- **Lasso**

Not just useful in linear models

# Dimensionality Reduction

We looked at

- Principle Component Analysis
- Lasso
- **LDA**

# Clustering

We looked at

- K-means
- Hierarchical Clustering

Other models

- DBSCAN
- Gaussian Mixtures

# Regularisation Methods

- Ridge
- Lasso

Serves different tasks. Can be combined in some cases



# **Supervised Learning**

**Regression**

**Classification**

# Supervised Learning

Many of the methods we looked at in this class can be used for both regression and classification

We mainly work with 2 types of trade-offs

- Flexibility / Interpretability
- Bias / Variance

# Supervised Learning

The models we saw in this class lays the foundation for most models which doesn't go under the neural network umbrella

- xgboost
- lightgbm
- catboost
- stacking

# Other considerations

- Implementation and run time
- What metrics are important
- Your problem statement

**Thank you!**