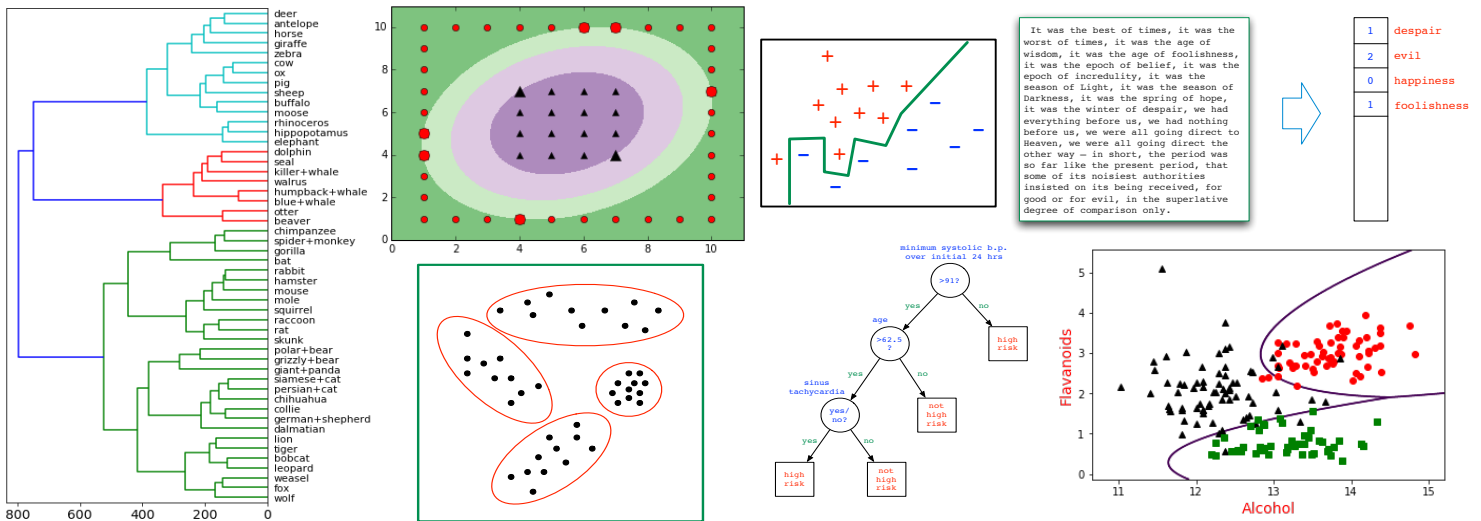


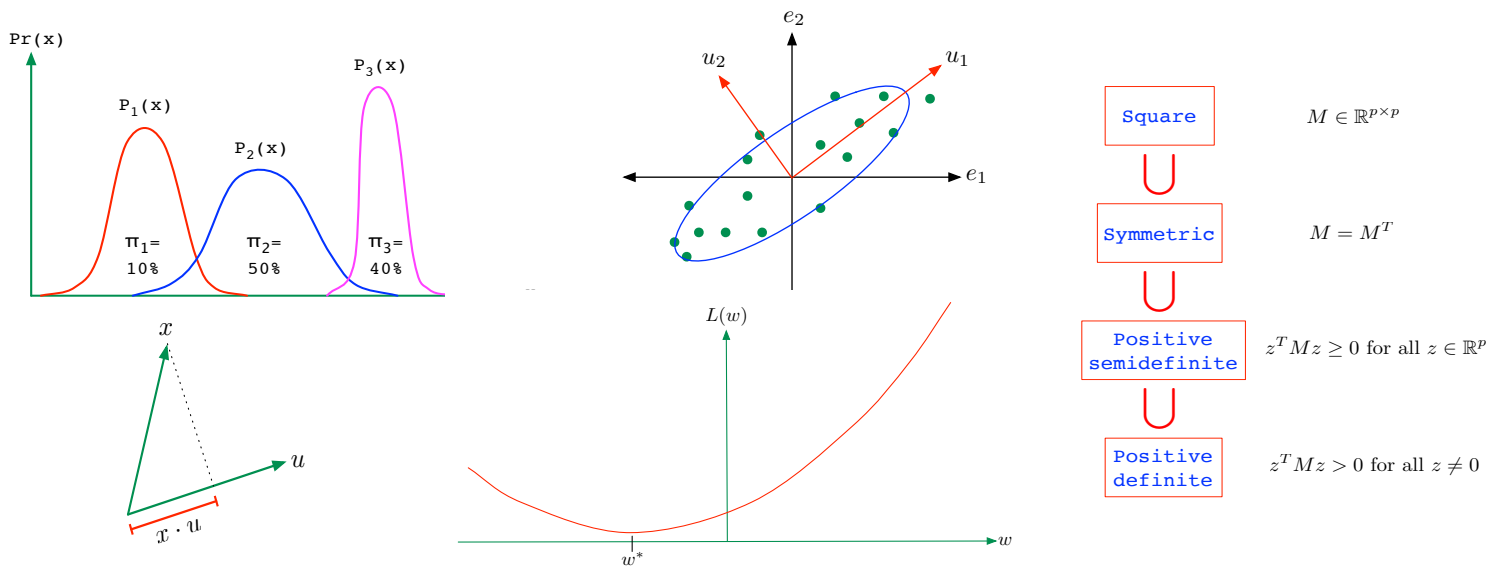
DSE 220X: Fundamentals of Machine Learning



Nearest neighbor
Generative models
Least-squares regression
Ridge regression, Lasso
Logistic regression
Support vector machines

Kernel methods
Decision trees
Boosting and bagging
Random forests
 k -means
Mixtures of Gaussians

Hierarchical clustering
Principal component analysis
Singular value decomposition
Autoencoders
Deep learning



Probability

Probability spaces
Bayes' rule
Random variables
Mean and variance
Measuring dependence

Linear algebra

Matrices and vectors
Projections
Positive definiteness
Eigendecompositions
Spectral decomposition

Optimization

Gradient descent
Stochastic gradient descent
Convex optimization
Duality

Skills you will acquire

- ① Familiarity with most widely-used ML methods
 - How they work
 - The kinds of data they are suited to
 - Their strengths and weaknesses
- ② Adapting existing methods to a particular application
- ③ The foundational knowledge to keep pace with a fast-moving field

