Models explored in this course

- Probability distribution
  - Normal, Exponential, Poisson, Binomial
  - Gaussian mixture model (GMM)
- Linear model
- Generalized linear model (GLM)
  - Poisson
  - Logistic
- Nonlinear model
  - Polynomial
  - K-Nearest neighbors (KNN)
- Regularization
  - Ridge, Lasso, Elastic net
- Ensemble model
  - Random forest
  - Extreme gradient boosting (XGBoost)
- Support vector machine (SVM)
- Clustering
  - K-means
  - Gaussian mixture model (GMM)
  - Density-based spatial clustering (DBSCAN)
- Dimensionality reduction
  - Principal component analysis (PCA)
  - Uniform manifold approximation and projection (UMAP)
  - t-distributed stochastic neighbor embedding (t-SNE)
- Neural network (NN)
  - Feedforward neural network (FNN)
  - Convolutional neural network (CNN)
  - Reccurent neural network (RNN)
    - Long/Short term memory (LSTM) neural network
- Modeling sequences
  - Hidden Markov model (HMM)
  - Reccurent neural network (RNN)
- Models of neurons
  - Leaky integrate and fire (LIF) neuron
  - Hodgkin and Huxley (HH) neuron