Applied Machine Learning

Deep Neural Networks I

Deep Neural Networks

- High-level description of neural networks and their structure

- Neural networks as classifiers

- Week overview

Deep Neural Networks

- Neural Networks

- Units and Layers

- Classification Process

- Training a single-layer Neural Network

- Deep Neural Networks

- Backpropagation to Train Deep Neural Networks

Deep Neural Networks

- Neural networks are quite popular for classification

- Training

  - computationally expensive

  - experience and experimentation helps to tune training

- Some features to consider Neural Networks for my problem

  - Big datasets

  - data items may have many features

  - hard to determine good features
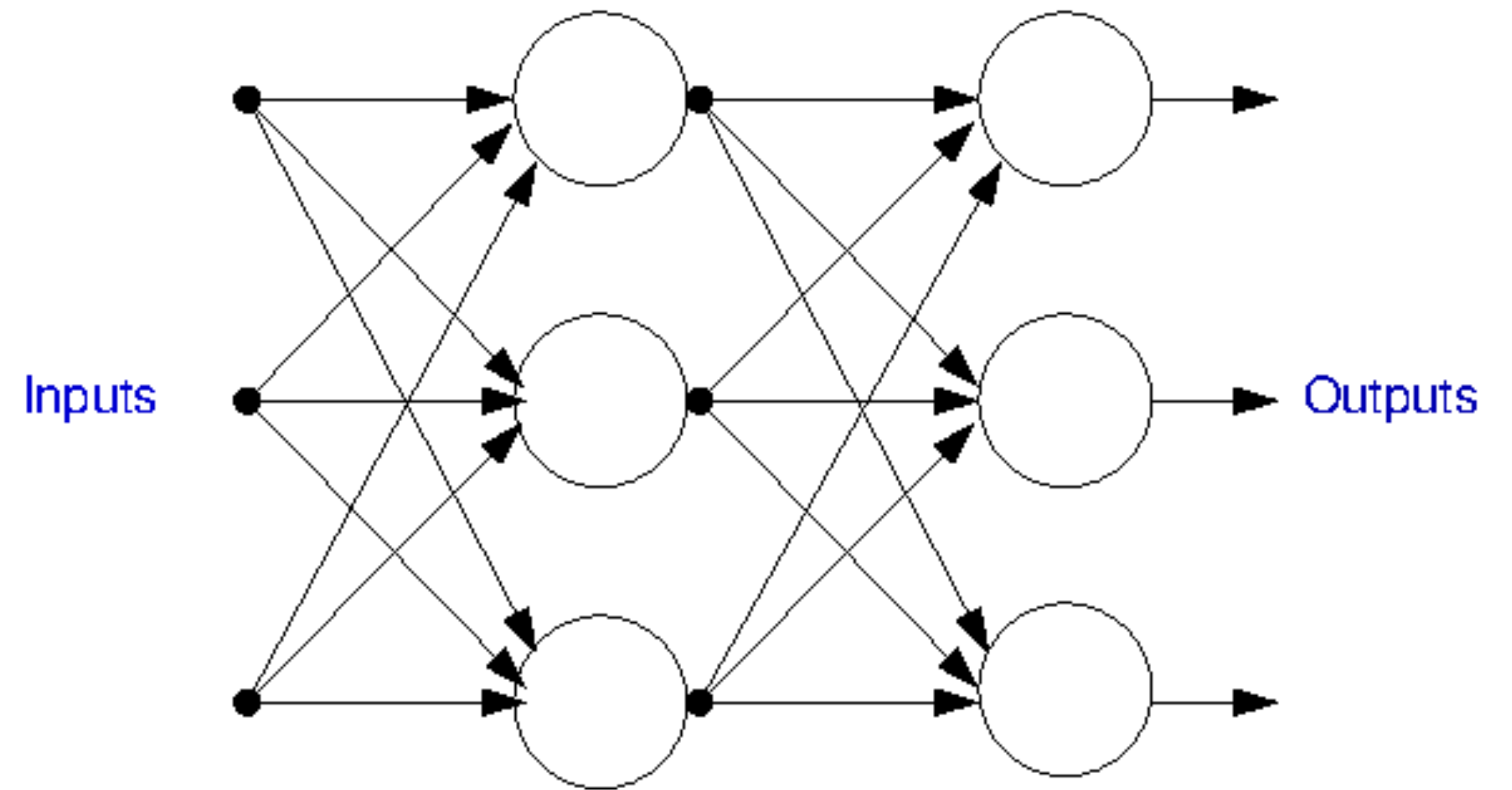
Neural Networks

- Neural Network: network of units

  - Nodes - Units

    - Inputs

    - Output: Function of Inputs

  - Edges - Connections

    - Weighted

  - Hierarchical - Layers

    - Network inputs are not constrained

    - Network outputs: classes
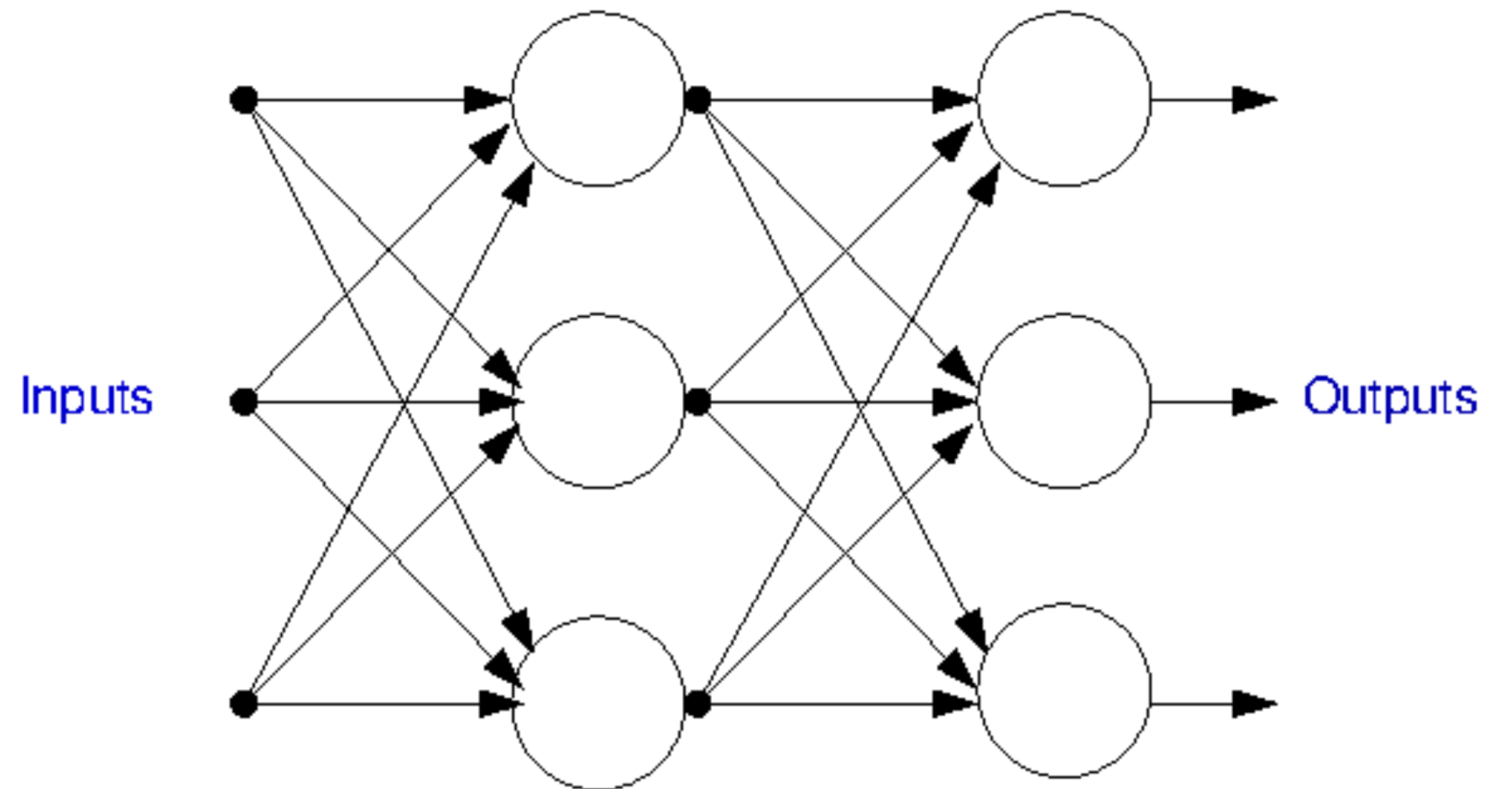
Inputs

Outputs

Neural Networks

- Classifier

  - One input per dataset feature

  - One or more layers

  - Each output is one class

- Training:

  - Stochastic Gradient Descent

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