Lecture 10 – CNN Applications and Tricks
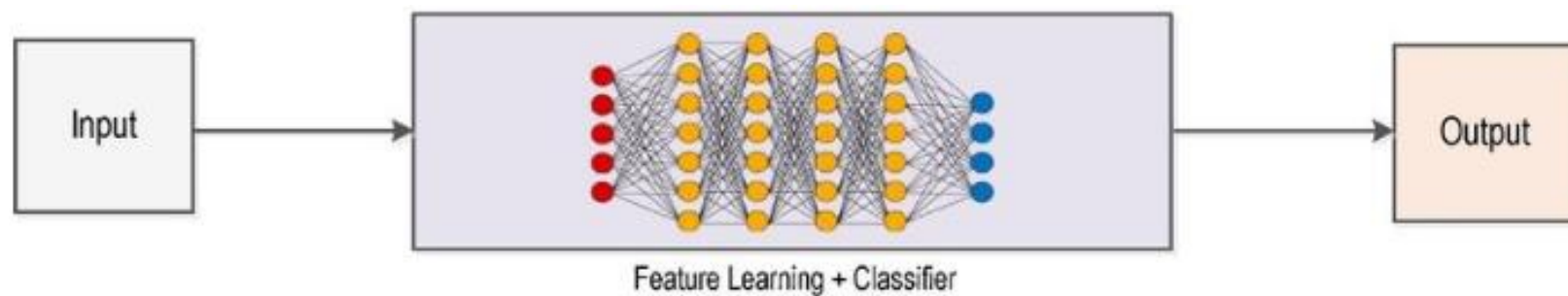
Prof. André Gustavo Hochuli

gustavo.hochuli@pucpr.br
aghochuli@ppgia.pucpr.br
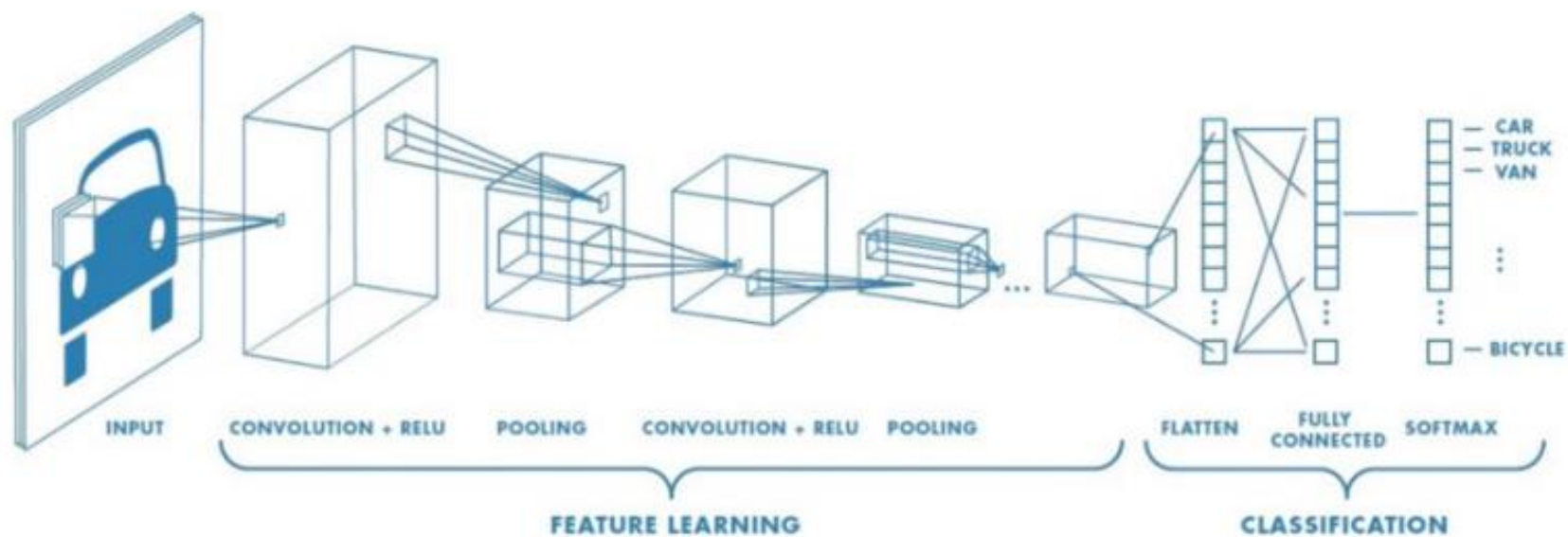
Topics

- Review of Lecture 09

- Convolutional Neural Network

    - Basic Concepts

    - Data Augmentation

    - Transfer-Learning

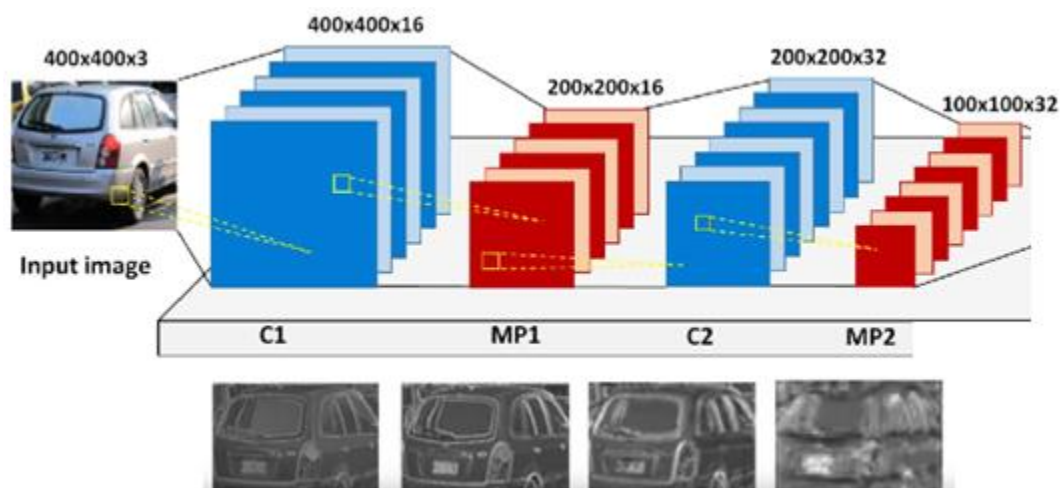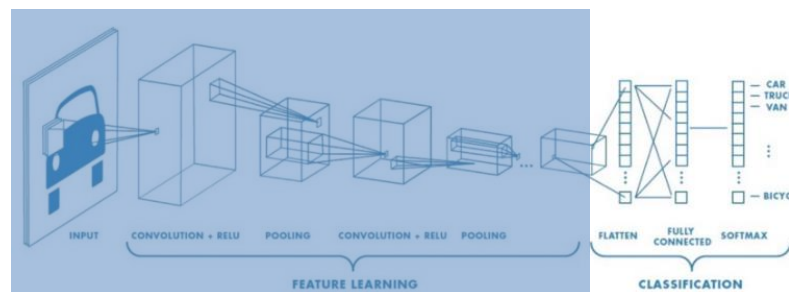   - Applications

- Practice

Deep Learning Pipeline

Feature Learning + Classifier

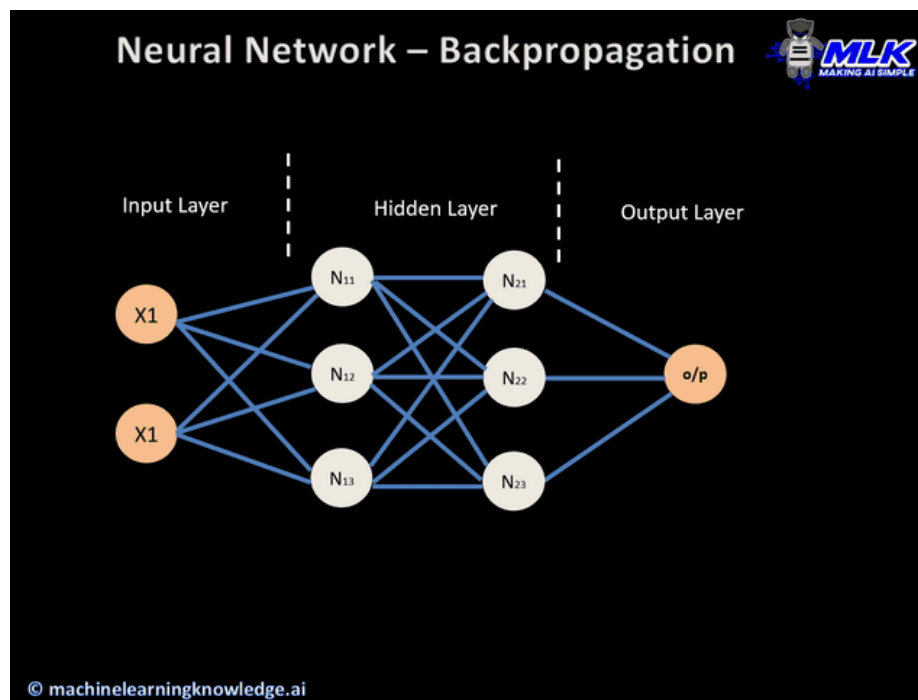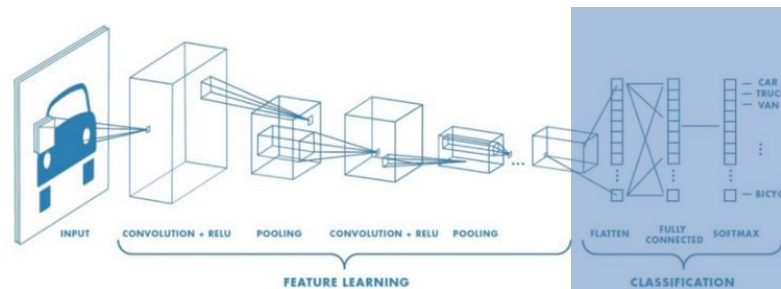# Convolutional Neural Network

- CNN
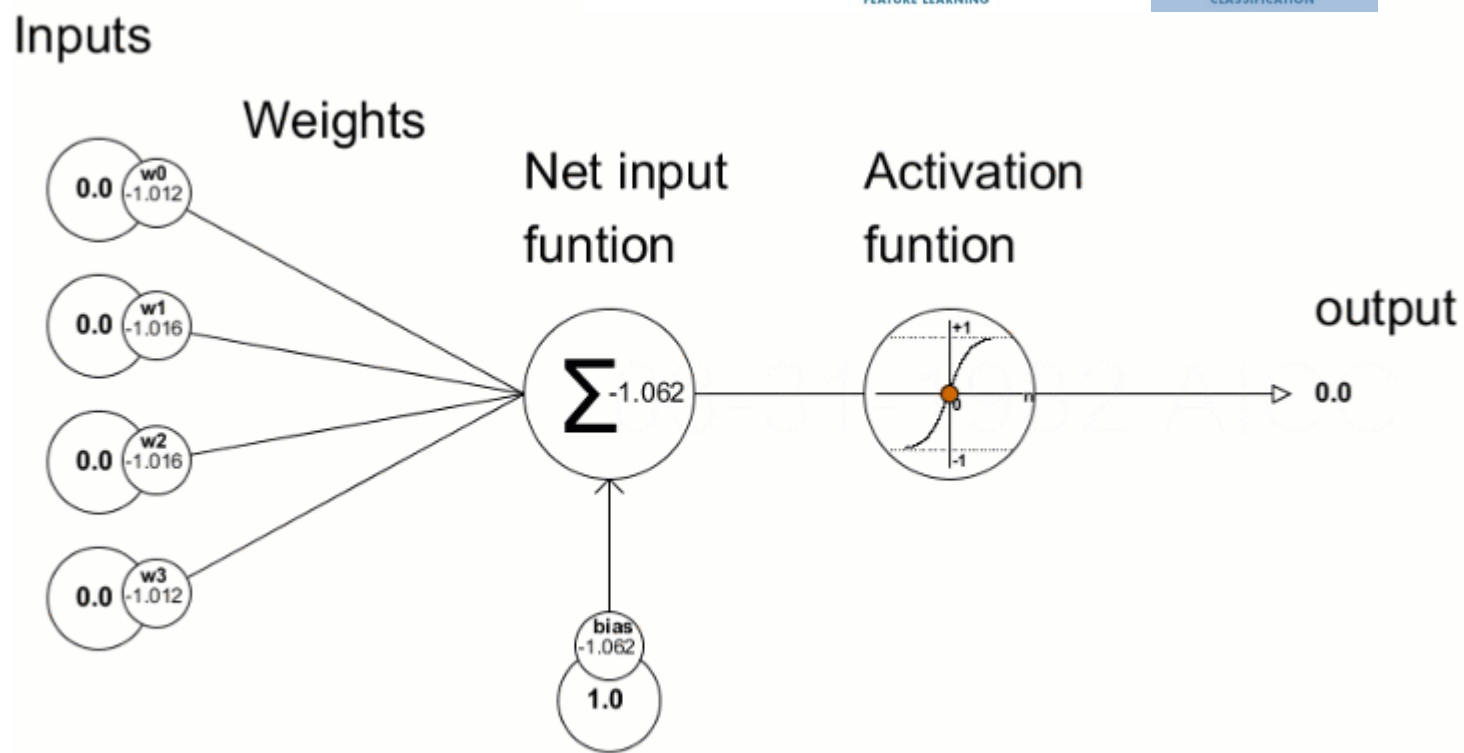
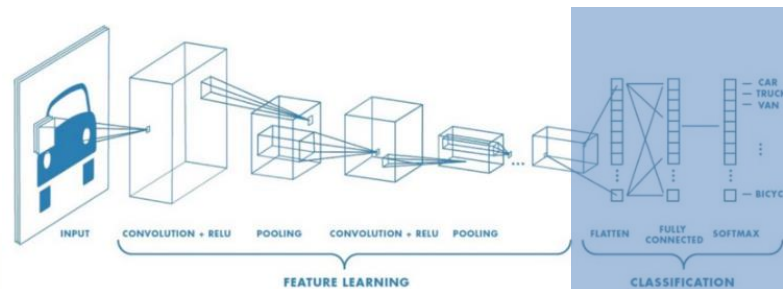# Convolutional Neural Network

- Feature Extraction

Convolutional Neural Network
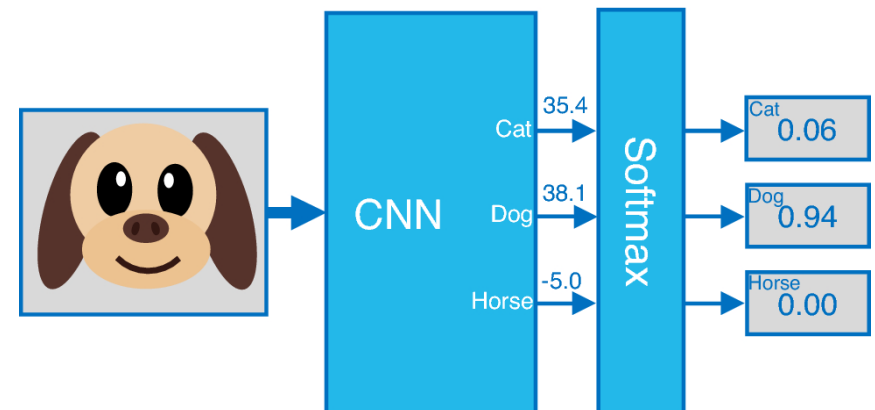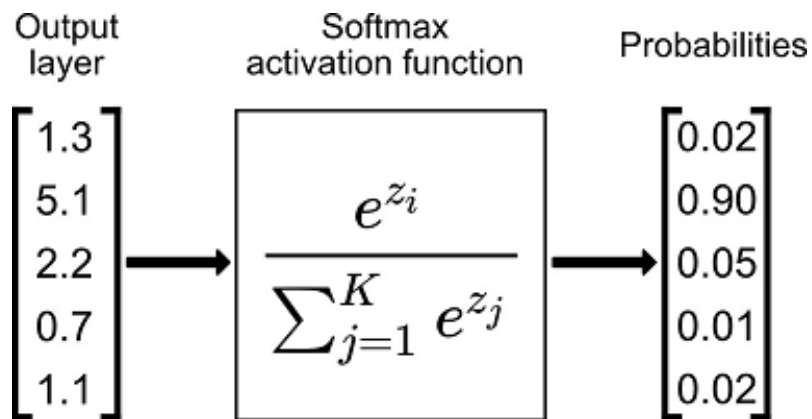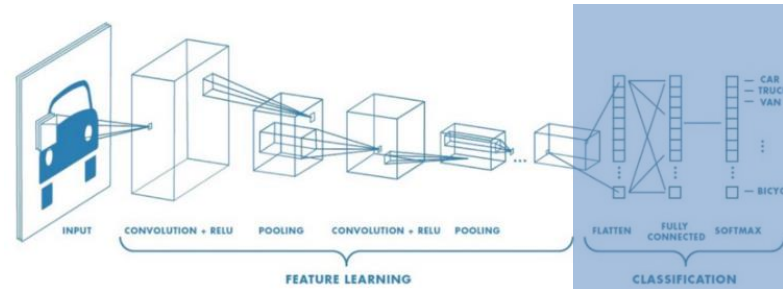
- Classification

  - Forward and Back Propagation

Convolutional Neural Network

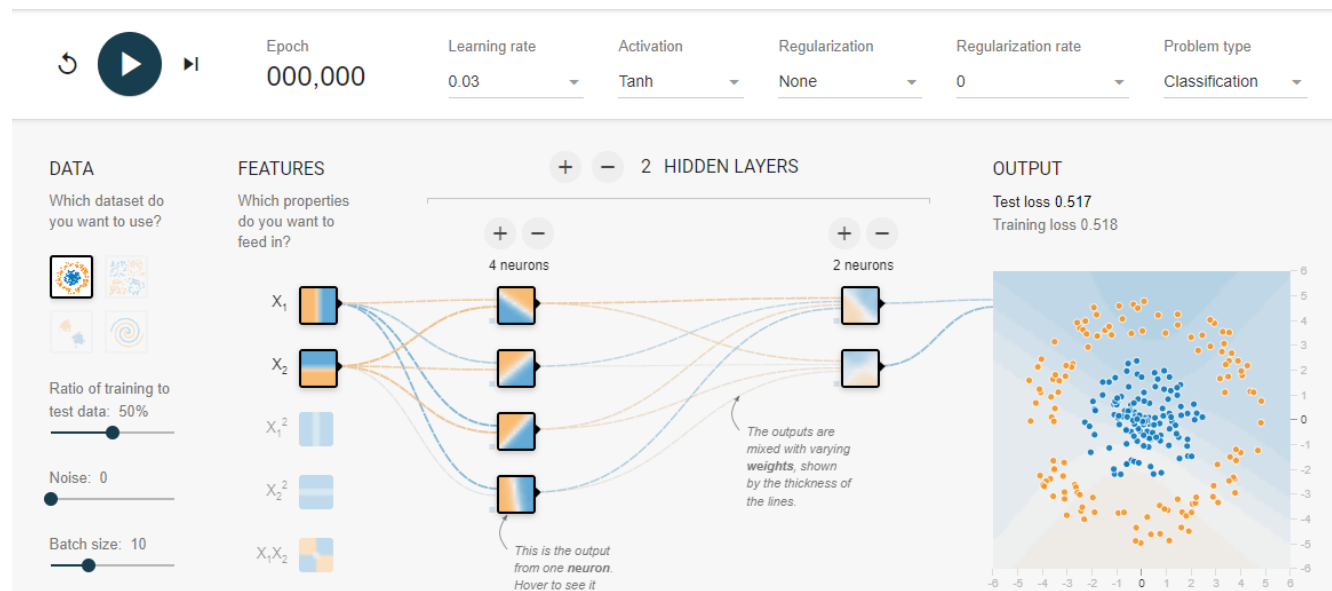- Forward and Back Propagation

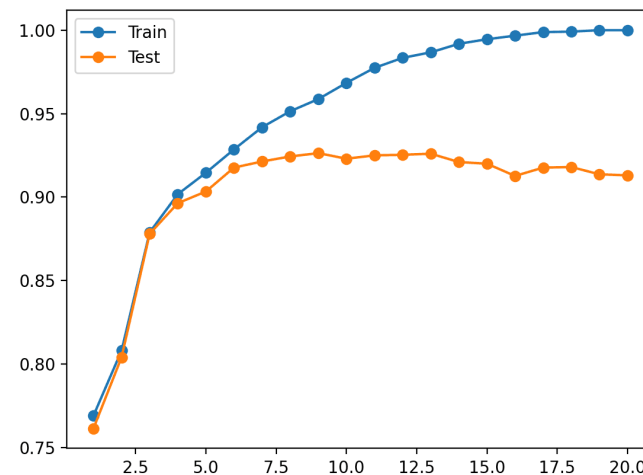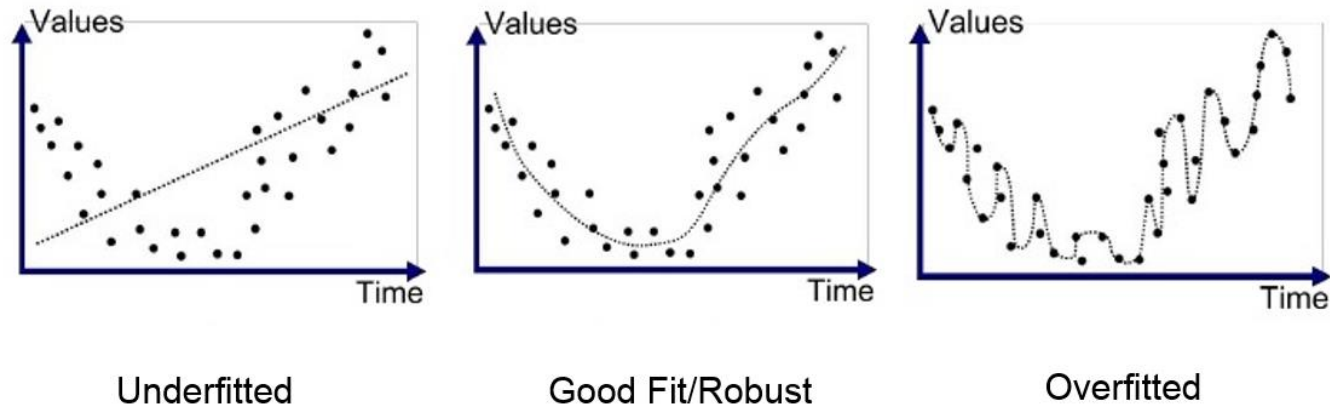# Convolutional Neural Network

- Softmax

Convolutional Neural Network

- Tensorflow Playground

https://playground.tensorflow.org/
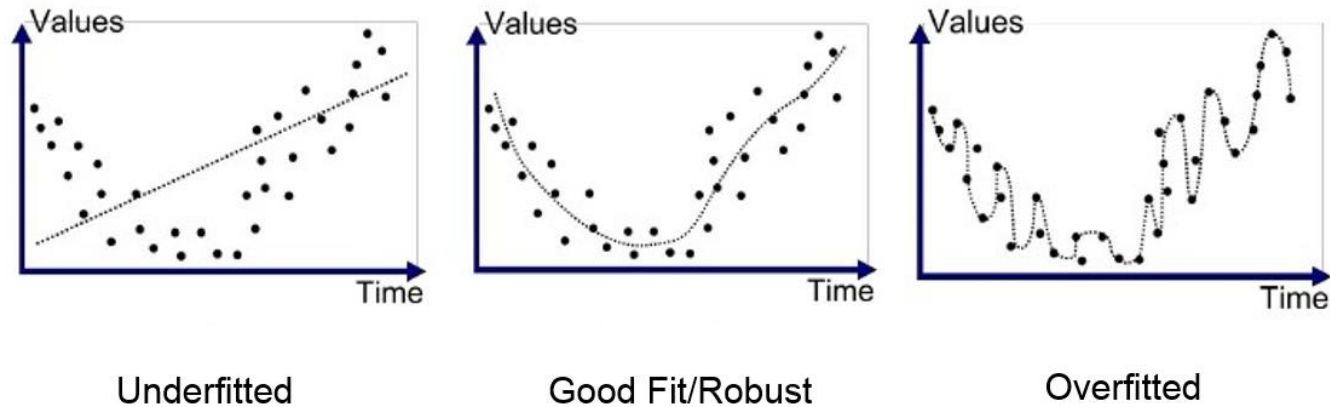
Overfitting

- Bad generalization

| Underfitted | Good Fit/Robust | Overfitted |

Overfitting

- Bad generalization

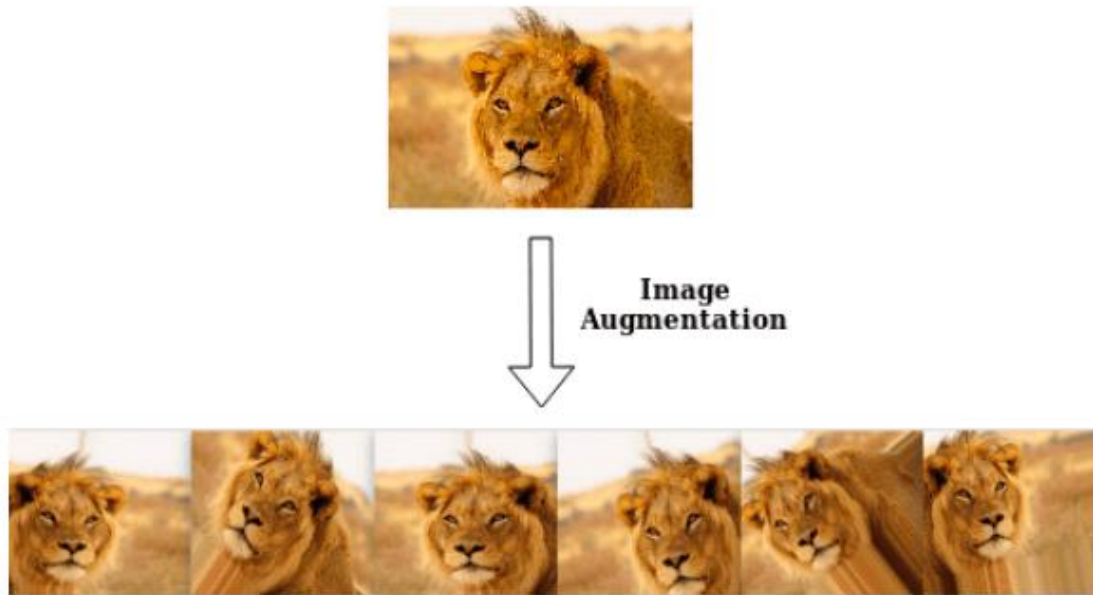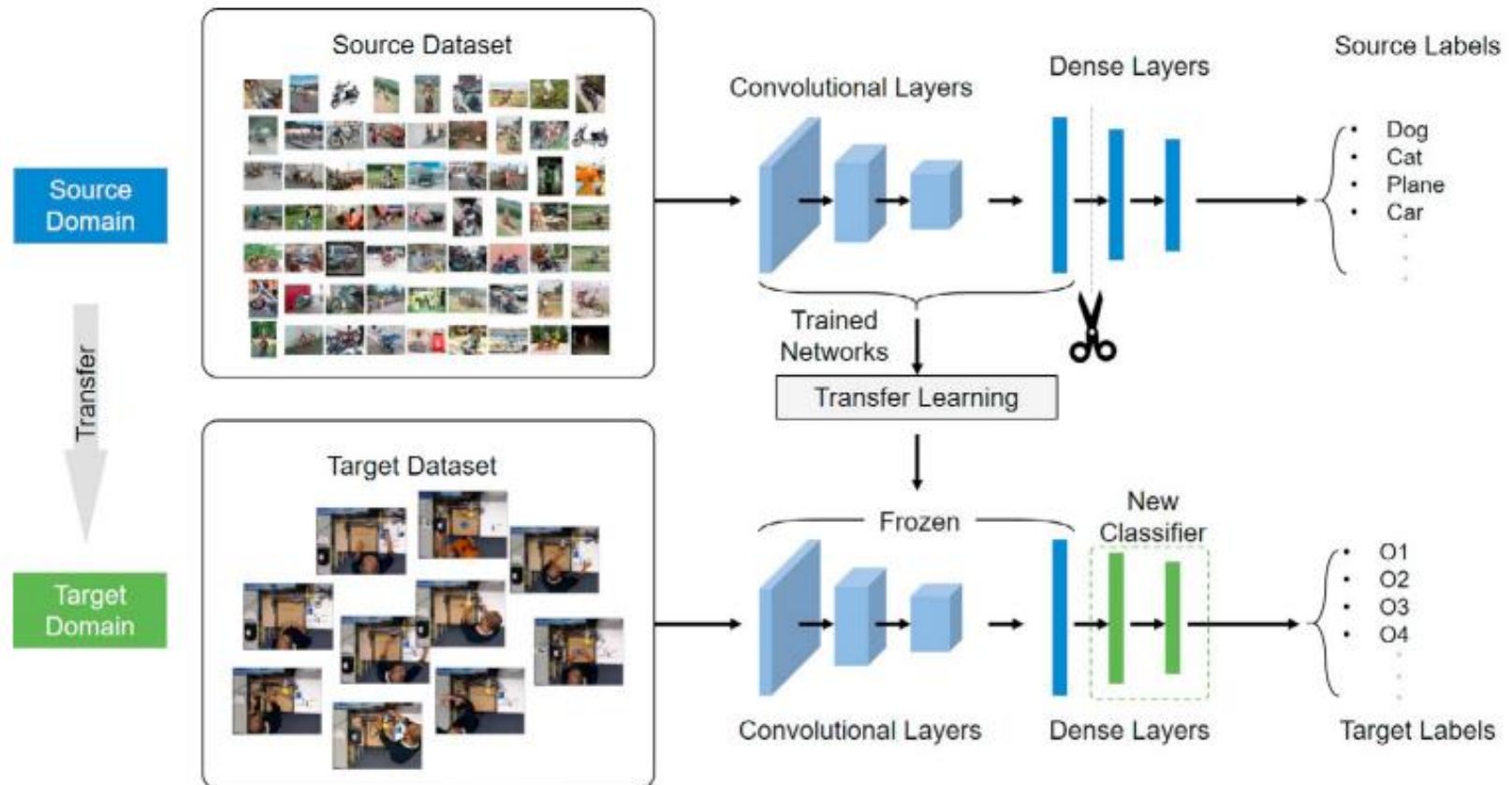| Underfitted | Good Fit/Robust | Overfitted |
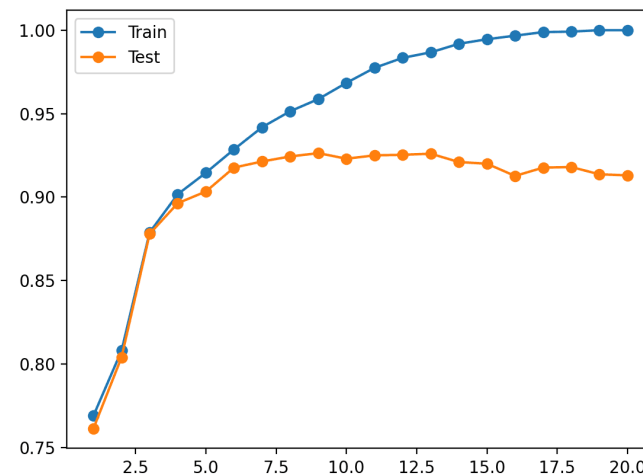
Data Augmentation

- Enlarge the dataset with synthetic samples

Transfer Learning

- Weight Sharing

- Feature Extraction weights are frozen (or not...) during learning

Let's Code

- [LINK]

- **Assessment Task: PJBL-3 at Canvas**
  - **Delivery date: 06/11 23:59**