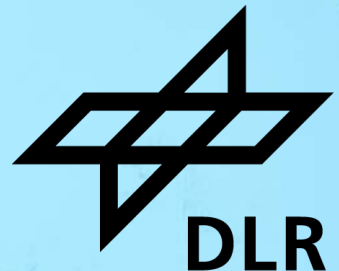# INTRODUCTION TO DEEP LEARNING
RECAP DAY 1

Auliya Fitri, Sai Vemuri, Sreerag Naveenachandran

**Machine Learning Group
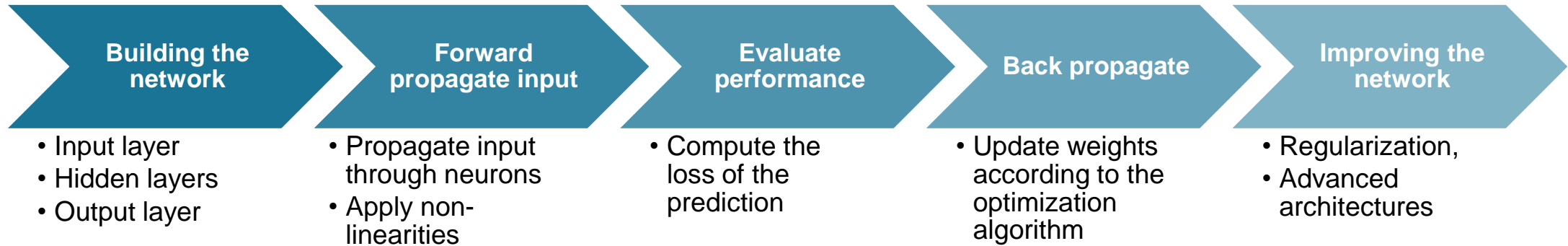Institute of Data Science**
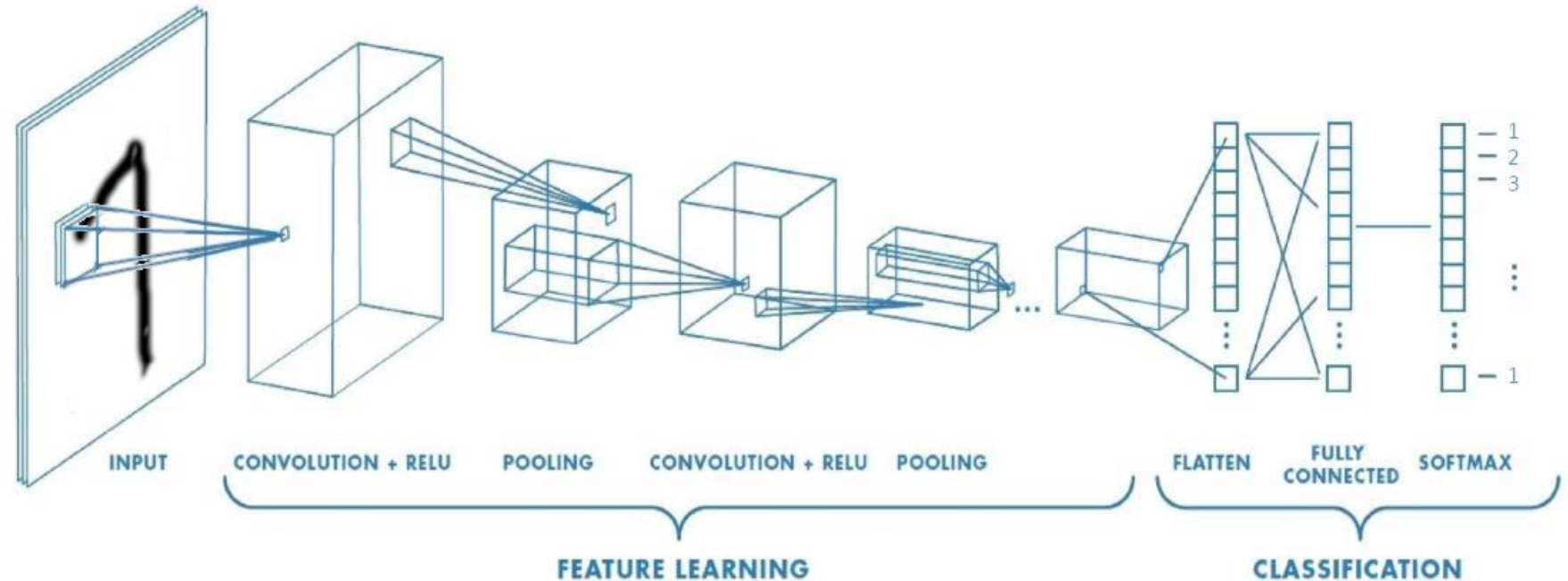
DLR

Schedule

Date	Time	Activity
13.11.2025 Day 1	09:00 - 10:00	Introduction and basics
	10:00 - 10:30	Hands-on I
	10:30 - 10:45	Coffee break
	10:45 - 11:45	Advanced concept and Convolutional Neural Network
	11:45 - 12:15	Hands-on II
	12:15 - 12:30	Recap Day 1
14.11.2025 Day 2	09:00 - 10:00	Deep Generative Model
	10:00 - 10:30	Hands-on III
	10:30 - 10:45	Coffee break
	10:45 - 11:45	Transformer
	11:45 - 12:15	Hands-on IV
	12:15 - 12:30	Code and knowledge sources + closing

We're here!

Neural network concepts

DLR

Building the network
- Input layer
- Hidden layers
- Output layer

Forward propagate input
- Propagate input through neurons
- Apply non-linearities

Evaluate performance
- Compute the loss of the prediction

Back propagate
- Update weights according to the optimization algorithm

Improving the network
- Regularization,
- Advanced architectures

Convolutional Neural Network

INPUT — CONVOLUTION + RELU — POOLING — CONVOLUTION + RELU — POOLING — FLATTEN — FULLY CONNECTED — SOFTMAX

FEATURE LEARNING — CLASSIFICATION

- CONV and POOL layers output high-level features of input
- Fully connected layer uses these features for classifying input image
- Express output as **probability** of image belonging to a particular class

$$\text{softmax}(y_i) = \frac{e^{y_i}}{\sum_j e^{y_j}}$$

Imprint

Topic: **Introduction to Deep Learning**
                Recap Day 1

Date: 2025-11-13

Author: Auliya Fitri, Sai Vemuri, Sreerag Naveenachandran

Institute: Data Science

Image sources:All images "DLR (CC BY-NC-ND 3.0)" unless otherwise stated