

Overview

- activity of deciding for given input x , to which class the input belongs
- given input x , determine $y=f(x)$
 - $y \in y_1 \dots y_n$
 - finite number of classes
- typical [[Machine Learning]] task
 - if classification rules are too complex

Classification as Supervised Learning

- given a set of example pairs (x, y)
 - x input
 - y label

Example 1: (“I’m now working on Analysis”, neutral)

Example 2: (“I got a 1 in Analysis! (dance)”, happy)

Example 3: (“Aaarghh!!! I will never understand
Analysis (headbang)”, unhappy)

- e.g.
- each y generated by unknown function f
- we assume f is a function of x
 - x might be parameters completely independent from f
 - goal is to approximate function/hypothesis
- quality of f needs to be measured with never before seen test data

Classification Difficulties

What are good classes? Do we differentiate between the right problems?

What is a good vector representation of the items that let's us differentiate between classes easily?

What is a good algorithmic set-up to differentiate between classes – is it really a neural network?

If yes – what is a suitable ANN architecture? What are good decision functions?

If we have all that – what are suitable parameters (weights)?