

Assignment 3.2

Shortly discuss the design of a concept learner (e.g. instances, training examples, hypothesis space, target concept) for the following concept description: The disease is called Addison's disease. It is characterized by fatigue, muscle weakness, low mood, loss of appetite and increased thirst, but not necessarily all of them. Symptoms might be less or more severe depending on the stage of the disease.

Example	Fatigue	Muscle weakness	Low mood	Loss of appetite	Increased thirst	Addison's Disease
1	Less severe	More severe	Less severe	More severe	More severe	Yes
2	More severe	More severe	Less severe	Less severe	Less severe	Yes
3	More severe	Less severe	More severe	Less severe	More severe	No
4	Less severe	Less severe	Less severe	More severe	Less severe	Yes

Positive and negative training examples for the target concept *Addison's disease*

Given:

- Instances X : Addison's disease, characterized by the symptoms
 - *Fatigue* (with values *Less severe* and *More severe*),
 - *Muscle weakness* (with values *Less severe* and *More severe*),
 - *Low mood* (with values *Less severe* and *More severe*),
 - *Loss of appetite* (with values *Less severe* and *More severe*) and
 - *Increased thirst* (with values *Less severe* and *More severe*)
- Hypotheses H : Each hypothesis is described by a conjunction of constraints on the attributes *Fatigue*, *Muscle weakness*, *Low mood*, *Loss of appetite*, *Increased thirst*. The constraints may be "?" (any value is acceptable), "∅" (no value is acceptable), or a specific value.
- Target concept c : *Addison's disease*: $X \rightarrow \{0,1\}$
- Training Examples D : Positive and negative examples of the target function

Determine:

- A hypothesis h in H such that $h(x) = c(x)$ for all x in X .