Assignment7 – Learning

Given: June 12 Due: June 23

Problem 7.1 (Decision Tree Learning in Python)

Implement the *Decision Tree Learning algorithm* (*DTL*) in Python using the files at https://kwarc.info/teaching/AI/resources/AI2/dtl.

Problem 7.2 (Loss)

Our goal is to find a linear approximation h(x) = ax for the series of square numbers 0, 1, 4, 9, 16.

- 1. Model this situation as an *inductive learning problem*.
- 2. Assuming all 5 possible examples are equally probable, compute the generalized loss using the *squared error loss* function. (This is a function of *h*.)
- 3. Find *h**.
- 4. What is the *error rate* of h^* ?

Problem 7.3 (Overfitting)

Explain what overfitting means and why we want to avoid it.

Problem 7.4 (Competition (due September 15))

In this competition, you will implement an agent that explores the FAULumpus world. You will receive up to 2 percentage points of additional bonus for your agents.

All further details will be posted on studon soon.