

CS 422 Homework3

Xingli Li, Illinois Institute of Technology

1.1 Question

Problem 1.1-(a)

How many levels are there in the decision tree?

1 | There are 3 levels in the decision tree.

Problem 1.1-(b)

What is the default class label associated with each vertex?

1 | Level 1, vertex 1: Default class label is setosa.
2 | Level 2, vertex 2: Default class label is setosa.
3 | Level 2, vertex 3: Default class label is versicolor.
4 | Level 3, vertex 4: Default class label is versicolor.
5 | Level 3, vertex 5: Default class label is virginica.

Problem 1.1-(c)

Starting from the root node, what is the name of the first attribute used for a decision, and what are the split points? Your answer should be of the form:

Level N, split on attribute: <attribute name>.

Split points: < X.X left subtree, >= X.X right subtree ...

1 | Level 1, split on attribute: Petal.Length.
2 | Split points: <2.5 left subtree, >=2.5 right subtree
3 | Level 2, split on attribute: Petal.Width.
4 | Split points: <1.8 left subtree, >=1.8 right subtree

Problem 1.1-(d)

Each vertex has three lines.

(i) At each vertex, what do the three numbers in the middle line signify?

1 | They present the proportion of the number of corresponding Iris species after each time split.

(ii) At each vertex, what does the last line signify?

1 | Total proportion of Iris species corresponding to the leaf vertex.

