Intelligent Systems: Reasoning and Recognition

James L. Crowley

MoSIG M1   Winter Semester 2019
Exercise 2   31 January 2019

Classification with non-parametric models

Describe whether or not it is possible to use the specified technique to construct a classifier for each of the following problems. If it IS possible give the formula for $P(\vec{X} | \omega_k)$. If it is not possible, explain why.

1) You have a training set composed of grades from 6 classes for a population of 100 students from 20 countries. Can you use a K-nearest neighbor classifier to determine most likely nationality for an unknown student from their grades?

2) You have a training set composed of the weight (kg), height (cm), age (y) and gender for a population of 100 people. Can you use a Kernel density estimator to determine most likely gender for an unknown person from their weight (kg), height (cm) and age (y)?

3) You have a training set composed of the eye-color and nationality for a population of 1000 people. Can you use a ratio of histograms to determine most likely nationality of an unknown person from their eye-color ?