

Intelligent Systems: Reasoning and Recognition

James L. Crowley

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Exercise 5

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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 $P(\omega_k | \bar{X})$. If it is not possible, explain why.

- 1) A classifier to determine most likely nationality for an unknown student from grades from 6 classes using K-nearest neighbors, with training data of grades from 6 classes of 100 students from 20 countries.
- 2) A classifier to determine most likely gender for an unknown person from their weight (kg), height (cm) and age (y) using a Kernel Density Estimator, with training data from 100 people.
- 3) A classifier to determine the most likely nationality of an unknown person from their eye-color using a ratio of histograms and training data from 1000 people from 100 countries.