DTS201TC Final Exam Review Guide

1 Lectures

The list below hightlights important knowledge to support the final exam review.

Lecture 01

- what is pattern recognition
- describe some real-life applications
- motivations (Fundamental Concepts, Ethical Considerations, Research and Innovation,etc.)

Lecture 04a

- Average Risk (Expected loss)
- exercises

Lecture 05

- under what conditions discriminant functions become linear

Lecture 07

- With data set given and *pdf* of the data known, how to calculate the *pdf*'s parameters based on MLE approach.
- exercises

Lecture 08(a)

- With data set and priors given, *pdf* of the data known, how to calculate the *pdf*'s parameters based on MAP approach.
- differences and relations between MLE and MAP

Lecture 11

- k-NN Posterior Estimation
- two parameters
- examples

Lecture 13

- Perceptron Example

Lecture 14

- sigmoid and softmax function (understand, not memorize)

Lecture 15

- the idea behind SVM
- concept of the kernel trick, use examples
- how the regularization parameter C works in SVM

Lecture 16

- explain K-means

Lecture 17

- explain the idea of PCA
- role of eigenvalues and eigenvalues
- how many PCs should be retained
- exercises

Lecture 19

- Decision Trees construction
- Information gain

Lecture 20

- Underfitting and Overfitting
- cross validation

2 Distribution

- The exam paper consists only of short-answer questions; there are no multiple-choice questions or no fill-in-the blank questions.
- There are 5 primary questions in total, each with 2-4 sub-questions.
- The 1st question is calculation-based.
- The 2nd question is both calculation-based and descriptive/explanatory.
- Question 3,4 and 5 are only descriptive/explanatory.

3 How to use mock exam paper

The mock exam paper does reflect

- the number of questions
- types of questions
- level of difficulty

The mock exam paper does NOT reflect

- content of the final exam

mock exam paper release date: Oct.27th 23:00