

## Exercises for DW & DM

### Sheet 10 (until 21.01.2011)

You may hand in your solutions into the mailbox at the IFIS floor (Mühlenpfordtstraße 23, 2nd floor). For the ITIS students only, please send your solutions to [silviu@ifis.cs.tu-bs.de](mailto:silviu@ifis.cs.tu-bs.de). The deadline is Friday, after the next lecture (date is also mentioned above). You may answer in either German or English. **You are encouraged to work in teams of 2 students** (not more than 2), and send your solution as a team. Please mention the **name of both students** together with the corresponding **inmatriculation numbers**.

#### Exercise 1 (15P)

1. Considering the training set data presented in Annex 1, perform the following tasks:
  - a. Build a decision tree based on the training set data, using the algorithm provided in the lecture, considering all attributes as possible classification attributes, and as attribute selection method use the information gain. (10 P)
  - b. Apply the naïve Bayesian classification on the training data set in Annex 1, and classify this new data "Senior person with job, doesn't own a house and has good credit rating" with both the Bayesian classifier as well as the decision tree obtained in a). (5P)

#### Annex 1

| Age   | Has job | Owens house | Credit rating | Approve loan |
|-------|---------|-------------|---------------|--------------|
| Young | False   | False       | Fair          | No           |
| Young | False   | False       | Good          | No           |
| Young | True    | False       | Good          | Yes          |
| Young | True    | True        | Fair          | Yes          |
| Young | False   | False       | Fair          | No           |

|        |       |       |           |     |
|--------|-------|-------|-----------|-----|
| Middle | False | False | Fair      | No  |
| Middle | False | False | Good      | No  |
| Middle | True  | True  | Good      | Yes |
| Middle | False | True  | Excellent | Yes |
| Middle | False | True  | Excellent | Yes |
| Old    | False | True  | Excellent | Yes |
| Old    | False | True  | Good      | Yes |
| Old    | True  | False | Good      | Yes |
| Old    | True  | False | Excellent | Yes |
| Old    | False | False | Fair      | No  |