**CS256 – Midterm Exam Study Guide**

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| **Classification**  Task of assigning objects to one of several predefined categories. | **Training Set**  A collection of records. Each **record** contains a set of attributes one of which is the **class**. | **Model**  A function from the value of record attributes to the class attribute. | **Test Set**  A collection of records used to determine the accuracy of the classification model. | **Example Classification Techniques:**   1. **Neural Networks** 2. **Decision Tree** 3. **Rule Based Classifier** 4. **Memory Based Reasoning** 5. **Support Vector Machines** 6. **Naïve Bayes and Bayesian Belief Networks** |

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| **Induction**  Using a training set to generate a model.  **Deduction**  Process of applying a model to a training set. | **Hunt’s Decision Tree Induction Algorithm:**   * Let *Dt* be the set of training records that reach a node *t*.  1. If *Dt* contains records that **all belong to the same class *yt***, then *t* is a leaf node with class value *yt*. 2. If *Dt* is an **empty set**, then *t* is a leaf node with default value *yd.* 3. If *Dt* contains **records that belong to more than one class and there are no attributes left**, then *t* is a leaf node with default value is a leaf node with default value *yd*. 4. If *Dt* contains **records that belong to more than one class**, then use an attribute test to split the data into smaller subsets. Recursively apply the same procedure above. |  |