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| Decision Tree | Characteristics |  |
| Advantages | - relatively **fast learning** speeds  - convertible to **simple classification rules**  - can use SQL  - **comparable** classification **accuracy** |
| Disadvantages |  |
| Applications |  |
| Types |  |
| Bayesian Niave | Characteristics | **Statistical** Classifier Predicts class membership probabilities  **Foundation** Based on Bayes' Theorem  **Performance** Simple Bayesian classifier has comparable performance with decision tree & selected  neural network classifiers  **Incremental** Each training example can incrementally increase/decrease probability hypothesis is  correct (prior knowledge combined with observed data)  **Standard** Provide standard of optimal decision making to measure other methods against |
| Advantages |  |
| Disadvantages |  |
| Applications |  |
| Types |  |
| Neural Networks | Characteristics |  |
| Advantages | - High **tolerance to noisy data**  - Ability to **classify untrained patterns**  - Well-**suited for continuous-valued** inputs and outputs  - **Algorithms** are inherently **parallel**  - Techniques have recently been developed for extraction of rules from trained neural networks |
| Disadvantages | - **Long training** time  - Requires number of **parameters best determined empirically** (network topology, etc.)  - **Difficult to interpret** symbolic **meaning behind learned weights** and of hidden units |
| Applications |  |
| Types |  |
| Support Vector Machine | Characteristics | - Classification method for linear and non-linear data  - Uses nonlinear mapping to **transform original training data into higher dimension**  - With new dimension, **searches for linear optimal separating hyperplane** (decision boundary)  - Using appropriate nonlinear mapping to sufficiently high dimension, data from two classes can always be separated by hyperplane, which SVM finds using support vectors ("essential" training tuples) and margins (defined by support vectors) |
| Advantages | - **High accuracy** to ability to model complex nonlinear decision boundaries (margin maximisation)  - Useful for classification and prediction |
| Disadvantages | - **Training can be slow** |
| Applications |  |
| Types |  |