Decision Trees
Part 2

Andrew Kusiak
Intelligent Systems Laboratory
2139 Seamans Center
The University of Iowa
Iowa City, Iowa 52242 - 1527
Tel: 319 - 335 5934        Fax: 319 - 335 5669
andrew-kusiak@uiowa.edu
http://www.icaen.uiowa.edu/~ankusiak

Decision Boundaries 1

Decision Boundaries 2

Separating hyperplane

Regression Tree

Decision and Regression Tree

Decision and Regression Trees
Achieving a meaningful tradeoff between
Interpretation
and
Accuracy
Graphical Representation of Rules

Decision Rules

Rule Base

IF Income > 100K THEN Credit risk = Good
IF Income < 100k AND Debt < 10K THEN Credit risk = Good
IF Income < 100k AND Debt > 10K THEN Credit risk = Bad

Graphical Representation of Rules

Rules as a Decision Tree

IF Income > 100K THEN Credit risk = Good
IF Income < 100k AND Debt < 10K THEN Credit risk = Good
IF Income < 100k AND Debt > 10K THEN Credit risk = Bad

Graphical Representation of Rules

Data rotation may improve approximation of the training space (decision accuracy)
Normally the training or decision set gets rotated