Learning Based Java

The Basics

MIAS DSSI

6/8/07
Assumptions

• The user has an OO representation

• Only objects need to be classified

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Classifiers

• Any method that classifies an object …

\[
discrete \text{ POSLabel(POSLabelledWord } w) \leftarrow \{ \text{ return } w.\text{label}; \}
\]

… and returns features

• Does not imply learning
Learning Classifiers

• **Learn** to mimic an oracle
• **Using** other classifiers as features
• **From** data
• **With** a learning algorithm

• Can produce a discrete distribution
Inference

• Making classifiers’ decisions coherent
• Example: Shallow Parsing
  
  John threw the ball to Mary.

  Chunks cannot overlap

• Maximize E[correct decisions]
Constraints

• Written in First Order Logic
• In terms of learning classifiers and Java objects

\[
\text{forall } (\text{Phrase } p \text{ in sentence}) \\
\text{exists } (\text{Word } w \text{ in } p.\text{allWords}()) \\
\text{MyLearner}(w) :: \text{“yes!”}
\]