Information Systems
ISM 3011

Fall 2004

Unit 11A

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The Difference Between Natural and Artificial Intelligence

Attributes	Natural Intelligence (Human)	Artificial Intelligence (Machine)
The ability to use sensors (eyes, ears, touch, smell)	High	Low
The ability to be creative and imaginative	High	Low
The ability to learn from experience	High	Low
The ability to be adaptive	High	Low
The ability to afford the cost of acquiring intelligence	High	Low
The ability to use a variety of information sources	High	High
The ability to acquire a large amount of external information	High	High
The ability to make complex calculations	Low	High
The ability to transfer information	Low	High
The ability to make a series of calculations rapidly and accurately	Low	High

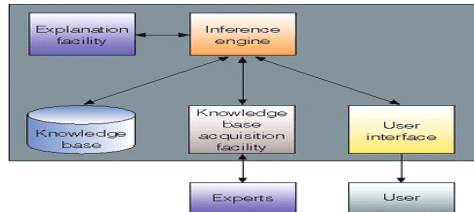Dr. Martin Hepp   2

An Overview of Expert Systems

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Components of an Expert System
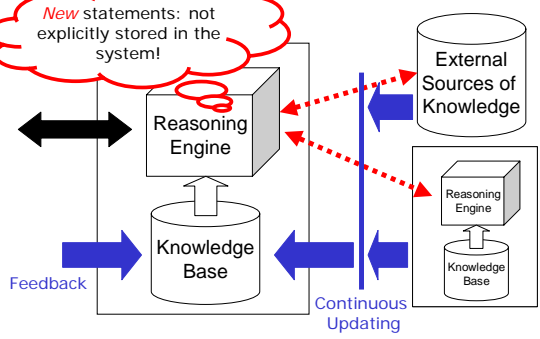
FIGURE 11-3
Components of an Expert System

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Not just Database Queries!

New statements: not explicitly stored in the system!
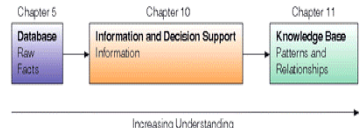
Reasoning Engine

External Sources of Knowledge

Reasoning Engine

Knowledge Base

Knowledge Base

Feedback

Continuous Updating

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Knowledge Base

FIGURE 11-4
The Relationships among Data, Information, and Knowledge

Chapter 5	Chapter 10	Chapter 11
Database – Raw Facts	Information and Decision Support – Information	Knowledge Base – Patterns and Relationships

Increasing Understanding

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The Semantic Web

http://www.bestbuy.com

cameras.xml

<offer>
<make>www.sony.com</make>
<model>camera123</model>
<photo>3,000,000</photo>
<price cur="USD">69.99</price>
</offer>

http://www.sony.com

camera123.rdf

Statements about internal memory, weight, size, etc.

guarantee.rdf

Statements about guarantee conditions and procedures

mysony123.rdf

Comprehensive Information Model for one specific purpose

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Metalog Example

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When to Use Expert Systems

- High payoff
- Preserve scarce expertise
- Distribute expertise
- Provide more consistency than humans
- Faster solutions than humans
- Training expertise

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The Use of Rules

Mortgage Application for Loans from $100,000 to $200,000

If there are no previous credit problems and

If monthly net income is greater than 4 times monthly loan payment and

If down payment is 15% of the total value of the property and

If net assets of borrower are greater than $25,000 and

If employment is greater than three years at the same company

Then accept loan application

Else check other credit rules

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FIGURE 11-5
Rules for a Credit Application

The Knowledge Acquisition Facility

FIGURE 11-6
The knowledge acquisition facility acts as an interface between experts and the knowledge base.

Knowledge base

Knowledge acquisition facility

Expert

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Participants in Developing and Using Expert Systems

Expert system

Domain expert   Knowledge engineer   Knowledge user

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Thank you!

The slides will be available on the internet at
http://ruby.fgcu.edu/courses/mhepp/
(-> CRN80097)

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