Please review the Discussion Board Participation grading rubric on your course Syllabus. This is important information to ensure you earn the maximum points.

**Topic 1: Artificial Intelligence**

Artificial intelligence systems form a broad and diverse set of systems that can replicate human decision making for certain types of well-defined problems.

How can expert systems enable a novice to perform at the level of an expert? What are the components of an expert system? Research several companies that use expert systems. How are expert systems used to assist in the decision making process. Be sure to identify your company and do not repeat another classmate's company.

Your first post should be made on or before Saturday and contain no fewer than 500 words and 2 references. Please refer to the Syllabus for additional Discussion Board requirements and rubric.

Be sure to cite and reference your research and the URL of the sites you chose for your research using proper APA format. Remember to list all your references to earn full credit for your post. (APA Manual reference: in text citations – Chapter 6, reference examples – Chapter 7).

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**RE: Discussion**

Edward Jackson  
1/14/2014 4:10:50 PM

The DXplain expert system seems to be quite a comprehensive system. I went out to the [http://dxplain.org/dxplain_faq.html](http://dxplain.org/dxplain_faq.html) website and saw that the expert system is an evolving diagnostic DSS. It says that the DXplain software is basically used by doctors that have no computer expertise, though do I find it hard to believe that someone would have no computer skills these days. This system does look quite important nonetheless, and is even sponsored by the American Medical Association (AMA).

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**RE: AI - Expert System**

Edward Jackson  
1/13/2014 1:33:20 PM

Maria, you have a very informative post. I consider AI to be quite a fascinating field,
and hope to one day delve into some AI programming for my own professional use. I see that you listed MATHLAB as one of the expert systems. I am currently working on a math minor and will be using MATHLAB to solve mathematics-based problems. The expert system I selected was SEP, the security management suite from Symantec. I know many businesses use SEP to manage the security on tens of thousands all at once.

RE: Week 4 DQ  Edward Jackson  1/12/2014 6:16:30 PM

You're right about Vanguard; they are great at knowledge automation and helpdesk/service desk software solutions. I went out to their website...and found that they also provide solutions for demand planning, inventory, financial forecasting, sales and operations planning, and even modeling and simulation. It seems like this company does a little bit of everything. I particularly liked their customer list (I love it when companies post their customers). I believe if you're a good company, and you're marketing that you're the best at what you do, the very least you could do is provide customer testimonials or list who the big name customers you have. I noticed they had Sears, Good Year, and Intel as their customers. Amazing.

Stop the virus  Edward Jackson  1/11/2014 2:57:19 PM

When one thinks of artificial intelligence, many things come to mind. If you use Hollywood movies as the baseline, movies like 2001: A Space Odyssey, iRobot, and even the Matrix have AI that has run-a-muck. But behind the sci-fi version of AI, real world, real life AI implementation is less chaotic, and handles more tedious and monotonous tasks not suited for humans. AI broadly covers expert systems, robotics, vision systems, natural language systems, learning systems, and neural networks (Stair & Reynolds, 2012). What I find extremely fascinating is that many people do not realize just how important AI already is to the everyday lives of most people. AI is just everywhere; for instance, the Army uses it in its expert systems, many hospitals use it to detect and analyze problems, the entire gaming industry is built upon AI, and much of the software we use on a daily basis has built-in AI (Stair & Reynolds, 2012).
On the topic of expert systems, expert systems can allow anyone, including a novice, to basically operate at an expert level using a system that has been created containing a knowledge base, inference engine, explanation facility, knowledge base acquisition facility, and user interface. Each of these components is essential to the overall functionality of an expert system.

I have personal and professional experience using many types of expert systems. One expert system that I have chosen to elaborate on is the Symantec Enterprise Protection Suite (SEP). The SEP suite allows an organization to monitor and administer workstation and server security. This security encompasses providing virus and worm protection, spyware protection, stopping malicious software from spreading, identify control, message filtering and control, along with handling many, many other enterprise-level concerns (Symantec, 2014). The importance of implementing such a system to manage enterprise security cannot be overstated.

How SEP works as an expert system is by maintaining current signature databases and enforcing a set of standards through domain policies. Viruses, malware, and other malicious, anomalous activities all have a certain effect on the files and the file system. These effects or signatures can be assessed and analyzed using SEP, and if something is detected, it can either be completely cleaned, or quarantined for review by the SEP administrator. What really makes this an expert system is that SEP really does all the heavy lifting, assessment, and analysis when it comes to the enterprise administration---and can do it effectively across tens of thousands of machines at once.

Let’s say you didn’t have SEP in place, if a workstation became infected with a virus, that virus could quickly infect other machines on your network, corrupting and destroying data as it spread. It would require a massive amount of technical effort on the behalf of the IT staff to stop the spread of the virus and repair data (if that was even possible). Also, the amount of security knowledge required to undertake such an endeavor would require your technicians to be well-versed in the manual process of stopping the virus and repairing file systems. With SEP, none of that is needed...thus, the administrator really only manages updating the signature database, and makes sure the domain policy is enforced...and on the rare occasion that SEP cannot fix the problem automatically, SEP still reports the issue (usually in great detail) so it can be assessed by a technician.

Companies that implement a SEP system are guaranteed optimal running workstations and servers, higher functioning networks, and greater integrity of the data that traverses the networks and that is in storage.

References

The Major Branches of Artificial Intelligence

• AI is a broad field that includes:
  – Expert systems, robotics
  – Vision systems, natural language processing
  – Learning systems, neural networks

Expert Systems

• Hardware and software that stores knowledge and makes inferences, similar to a human expert
• Used in many business applications

An Overview of Expert Systems

• Computerized expert systems:
  – Use heuristics, or rules of thumb, to arrive at conclusions or make suggestions
• The U.S. Army:
  – Uses the Knowledge and Information Fusion Exchange (KnIFE) expert system to help soldiers in the field make better military decisions

When to Use Expert Systems

• People and organizations should develop an expert system if it can:
  – Provide a high potential payoff or significantly reduce downside risk
  – Capture and preserve irreplaceable human expertise
  – Solve a problem that is not easily solved using traditional programming techniques
  – Develop a system more consistent than human experts
  – Provide expertise needed at a number of locations at the same time or in a hostile environment that is dangerous to human health
  – Provide expertise that is expensive or rare
– Develop a solution faster than human experts can
– Provide expertise needed for training and development

Components of Expert Systems
• Expert system:
  – Consists of a collection of integrated and related components
• Knowledge base:
  – Stores all relevant information, data, rules, cases, and relationships used by expert system
  – Creates knowledge base by:
    • Using rules
    • Using cases

Participants in Developing and Using Expert Systems
• Domain expert:
  – Person or group with the expertise or knowledge the expert system is trying to capture
• Knowledge engineer:
  – Person who has training or experience in the design, development, implementation, and maintenance of an expert system
• Knowledge user:
  – Person or group who uses and benefits from the expert system

• Data consists of raw facts
• Information:
  – Collection of facts organized so that they have additional value beyond the value of the facts themselves
• Knowledge:
  – Awareness and understanding of a set of information and the ways that information can be made useful to

Expert Systems Development Tools and Techniques
• Theoretically, expert systems can be developed from any programming language
• Expert system shells and products
  – Collections of software packages and tools used to design, develop, implement, and maintain expert systems support a specific task or reach a decision

Summary
Expert systems can enable a novice to perform at the level of an expert but must be
An expert system consists of a collection of integrated and related components, including a knowledge base, an inference engine, an explanation facility, knowledge acquisition facility, and a user interface. The knowledge base is an extension of a database, discussed in Chapter 3, and an information and decision support system, discussed in Chapter 6. It contains all the relevant data, rules, and relationships used in the expert system. The rules are often composed of IF-THEN statements, which are used for drawing conclusions. The inference engine processes the rules, data, and relationships stored in the knowledge base to provide answers, predictions, and suggestions the way a human expert would.

My Notes:

Information Systems, Decision Support Systems, and Knowledge Management

You have seen throughout this course how information systems can make you more efficient and effective through the use of database systems, the Internet, e-commerce, transaction processing systems, and many other technologies. The true potential of information systems, however, is in helping you and your coworkers make more informed decisions. Chapter 10 shows you how to slash costs, increase profits, and uncover new opportunities for your company using management information and decision support systems.

Knowledge management and specialized information systems are used in almost every industry. If you are a manager, you might use a knowledge management system to support decisive action to help you correct a problem. If you are a production manager at an automotive company, you might oversee robots that attach windshields to cars or paint body panels. If you are in the military, you might use computer simulation as a training tool to prepare you for combat. In a petroleum company, you might use an expert system to determine where to drill for oil and gas. You will see many additional examples of using these specialized information systems throughout Chapter 11.

Outcomes

Course outcome(s) practiced in this unit
• Discuss the differences among data, information, and knowledge

• List some of the tools and techniques used in knowledge management.

• Explain that decision support systems have many characteristics that allow them to be effective management support tools

• Define the term artificial intelligence and state the objective of developing artificial intelligence systems

• List the characteristics of intelligent behavior and compare the performance of natural and artificial intelligence systems for each of these characteristics

• List the characteristics and basic components of expert systems and outline and briefly explain the steps for developing an expert system

Course outcome(s) practiced in this unit

IT500-3: Analyze hardware and software components.

What do you have to do in this unit?

• Complete assigned reading.

• Participate in Discussion Board.

• Complete unit Assignment.

• Participate in Seminar or complete alternative assignment.

• Complete the Journal.

Reading Summary or Overview

Read the chapters that cover information systems, decisions support systems and knowledge management systems (two chapters).

The reading this week explains how to slash costs, increase profits, and uncover new opportunities for your company using management information and decision support systems.

Additionally, your reading explains knowledge management and specialized information systems along with the benefit of using multimedia in business settings.
Executive support system (ESS): Specialized DSS that includes all hardware, software, data, procedures, and people used to assist senior-level executives within the organization.

Geographic information system (GIS): Computer system capable of assembling, storing, manipulating, and displaying geographic information, that is, data identified according to its location.

Group support system (GSS): Software application that consists of most elements in a DSS, plus software to provide effective support in group decision making; also called group support system or computerized collaborative work system.

Heuristics: Commonly accepted guidelines or procedures that usually find a good solution.

Material requirements planning (MRP): Inventory-control techniques that help coordinate thousands of inventory items when the demand of one item is dependent on the demand for another.

Model management software: Software that coordinates the use of models in a DSS.

Nonprogrammed decision: Decision that deals with unusual or exceptional situations that can be difficult to quantify.

Optimization model: Process to find the best solution, usually the one that will best help the organization meet its goals.

Satisficing model: A model that will find a good — but not necessarily the best — problem solution.

Semistructured or unstructured problems: Complex problems in which the relationships among the pieces of data are not always clear, the data may be in a variety of formats, and the data is often difficult to manipulate or obtain.

Game theory: Use of information systems to develop competitive strategies for people, organizations, or even countries.

Informatics: Specialized system that combines traditional disciplines, such as science and medicine, with computer systems and technology.

Intelligent agent: Programs and a knowledge base used to perform a specific task for a person, a process, or another program; also called intelligent robot or bot.
Neural network: Computer system that can act like or simulate the functioning of a human brain.

Perceptive system: System that approximates the way a human sees, hears, and feels objects.

Assignment 4 – 100 points
Click the Rubric icon below for detailed instructions on what you will need to complete for this assignment.

Unit Outcomes addressed in this assignment:
- Discuss the differences among data, information, and knowledge
- List some of the tools and techniques used in knowledge management
- Define the term artificial intelligence and state the objective of developing artificial intelligence systems
- List the characteristics of intelligent behavior and compare the performance of natural and artificial intelligence systems for each of these characteristics

Course Outcomes addressed in this assignment:
IT500-1: Explain essential concepts of Information Technology.
IT500-2: Evaluate internet technologies.
IT500-3: Analyze hardware and software components.

In the past six months since Rainforest acquired its online widget retailer, it has expanded rapidly. Rainforest is now the number one supplier of widgets in the United States, and hopes to eventually expand to international sales. As a result, they must update their systems to support their rapidly growing organization. Specifically, they are interested in systems designed to support decision making, especially by higher management.

Write a report explaining at least three types of systems that will help them as they grow. Make sure that you explain the types of decisions they may face along with the systems that are best designed to support these decisions. Be sure to support your responses with research other than your book. Then, using the Internet, research and identify specific systems that may fulfill their needs. Choose at least two systems and explain why you chose these systems and how they will support RFs requirements.
Your report must include the recommendation for two potential systems that will fulfill their requirements based on the discussion of the types of available support systems you described. Find a primary source (company website or white paper) that explains the benefits of incorporating these systems into Rainforest’s network.

Remember that you not merely defining different systems and finding an example. You are explaining how this will help Rainforest to achieve its expansion goals.

Your response should be at least 1200 words, written in proper APA format using one inch margins, Times New Roman 12 point font, double spaced, a title page, headers, headings (where appropriate), in text citations and a reference page. Please make sure that you include a minimum of three references, at least one of which is a primary source.

Attending live Seminars is important to your academic success, and attendance is highly recommended. The Seminar allows you to review the important concepts presented in each unit, discuss work issues in your lives that pertain to these concepts, ask your instructor questions, and allow you to come together in real time with your fellow classmates. There will be a graded Seminar in Units 1 through 5. You must either attend the live Seminar or you must complete the Seminar alternative assignment in order to earn points.

**Option 1- Live Session:**

Prior to attending this session, search the Web to view the PowerPoint presentation, titled: “information, Decision Support…Decision Marking and Problem solving…Artificial Intelligence…” Be prepared to discuss Information and Decision Support Systems, Knowledge Management and Artificial Intelligence.

**Option 2- Alternative Assignment:**

You will benefit most from attending the graded Seminar as an active participant. However, if you are unable to attend you have the opportunity to make up the points by completing the alternative assignment.

You have two options for completing the alternative assignment

**Option 1:**

Watch the Seminar. Write a 1 page summary explaining the topics discussed.

**Option 2:**

The paper must be written in APA format and include at least one direct quote with proper citation and reference. Search the Web to view the PowerPoint presentation,
1. Describe the decision-making and problem-solving processes.

2. Provide at least two examples of the types of decisions that are made by DSS.

3. How do the decisions made by DSS differ from those made by MIS? DSS supports decision making and difficult decisions. Answer: MIS sheds light on a wide-range of common, day-to-day business decisions. Provide an example of when you would use each.

4. Discuss the optimization and heuristics models in decision support.

5. Describe what-if analysis and goal-seeking analysis.

6. What do you mean by AI or artificial intelligence?


8. What is a knowledge management system?

Your paper should be in APA format and cite all references used. Submit to the Seminar Dropbox.

In order to gain the most from your reading, each week you will keep a Journal in which you will write important ideas and topics that were discussed during the week. This will be a tool that you will maintain throughout the course to help you study and excel. Each week, you will add to your Journal and submit it to your instructor.