PROJECT ASSESSMENT

There are several major application areas of expert system such as agriculture, education, environment, law manufacturing, medicine power system etc. Expert system is used to develop a large number of new products as well as new configurations of established products. When established products are modified to include an expert system as a component or when an established product item is replaced with an expert system, the expert system supported entity is called intelligent. Expert systems are designed and created to facilitate tasks in the fields of accounting, medicine, process control, financial service, production, education etc. The foundation of a successful expert system depends on a series of technical procedures and development that may be designed by certain related experts.

Remember, The Expert System in AI consists of the following given components:

User Interface

The user interface is the most crucial part of the Expert System Software. This component takes the user's query in a readable form and passes it to the inference engine. After that, it displays the results to the user. In other words, it's an interface that helps the user communicate with the expert system.

Inference Engine

The inference engine is the brain of the expert system. Inference engine contains rules to solve a specific problem. It refers the knowledge from the Knowledge Base. It selects facts and rules to apply when trying to answer the user's query. It provides reasoning about the information in the knowledge base. It also helps in deducting the problem to find the solution. This component is also helpful for formulating conclusions.

Knowledge Base

The knowledge base is a repository of facts. It stores all the knowledge about the problem domain. It is like a large container of knowledge which is obtained from different experts of a specific field.

DESIGN OF AN EXPERT SYSTEM FOR DECISION MAKING IN REGULATORY AND TECHNOLOGY IMPLEMENTATION PROJECTS Using PYTHON such as:

- Information management
- Hospitals and medical facilities
- Help desks management.
- Employee performance evaluation
- Loan analysis
- Virus detection
- Useful for repair and maintenance projects
- Warehouse optimization
- Planning and scheduling
- The configuration of manufactured objects
- Financial decision making Knowledge publishing
- Process monitoring and control
- Supervise the operation of the plant and controller
- Stock market trading
- Airline scheduling & cargo schedules

The research paper is intended to provide you with the opportunity to more fully explore your class discussion topic.

A complete research paper in IEEE TEMPLATE (attached in project folder on TEAMS) that is reporting on experimental research will typically contain:

- Title: The "title" should be descriptive, direct, accurate, appropriate, interesting, concise, precise, unique, and should not be misleading
- Abstract : An abstract summarizes, usually in one paragraph of 300 words or less, the major aspects of the entire paper in a prescribed sequence that includes:
  1) the overall purpose of the study and the research problem(s) you investigated;
  2) the basic design of the study;
  3) major findings or trends found as a result of your analysis; and,
  4) a brief summary of your interpretations and conclusions.
- Introduction, research question/hypotheses:

  It may seem obvious, but introductions are always placed at the beginning of a paper. They guide your reader from a general subject area to the narrow topic that your paper covers. They also explain your paper's:

  o Scope: The topic you'll be covering
  o An overview of the topic. Start with a general overview of your topic. Narrow the overview until you address your paper's specific subject. Then, mention questions or concerns you had about the case. Note that you will address them in the publication.
  o Importance: Why your research matters in the context of an industry or the world, Explain why your topic needs to be addressed right now. If

applicable, connect it to current issues. Additionally, you can show a problem with former theories or reveal a gap in current research. No matter how you do it, a good rationale will interest your readers and demonstrate why they must read the rest of your paper.

Your introduction will cover a lot of ground. The length depends on the size of your paper as a whole. In many cases, the introduction will be shorter than all of the other sections of your paper.

- o Describe the methodology you used. Recount your processes to make your paper more credible. Lay out your goal and the questions you will address. Reveal how you conducted research and describe how you measured results. Moreover, explain why you made key choices.
- o An outline. Introductions often conclude with an outline. Your layout should quickly review what you intend to cover in the following sections. Think of it as a roadmap, guiding your reader to the end of your paper.

- Literature review (Describe/summarize empirical articles. At least 8 related scientific paper)
    - o A literature review surveys scholarly articles, books and other sources relevant to a particular issue, area of research, or theory, and by so doing, providing a description, summary, and critical evaluation of these works.
    - o Literature reviews are designed to provide an overview of sources you have explored while researching a particular topic and to demonstrate to your readers how your research fits into the larger field of study.
- Research Methods:

    There are two main groups of research methods in the social sciences:

    1. The **empirical-analytical group** approaches the study of social sciences in a similar manner that researchers study the natural sciences. This type of research focuses on objective knowledge, research questions that can be answered yes or no, and operational definitions of variables to be measured. The empirical-analytical group employs deductive reasoning that uses existing theory as a foundation for hypotheses that need to be tested. **This approach is focused on explanation**.
    2. The **interpretative group is focused on understanding phenomenon in a comprehensive, holistic way**. This research method allows you to recognize your connection to the subject under study. Because the interpretative group focuses more on subjective knowledge, it requires careful interpretation of variables.

    II. Content

    An effectively written methodology section should:

    - o **Introduce the overall methodological approach for investigating your research problem**. Is your study qualitative or quantitative or a combination of both (mixed

method)? Are you going to take a special approach, such as action research, or a more neutral stance?

- o **Indicate how the approach fits the overall research design**. Your methods should have a clear connection with your research problem. In other words, make sure that your methods will actually address the problem. One of the most common deficiencies found in research papers is that the proposed methodology is unsuited to achieving the stated objective of your paper.
- o **Describe the specific methods of data collection you are going to use**, such as, surveys, interviews, questionnaires, observation, archival research. If you are analyzing existing data, such as a data set or archival documents, describe how it was originally created or gathered and by whom.
- o **Explain how you intend to analyze your results**. Will you use statistical analysis? Will you use specific theoretical perspectives to help you analyze a text or explain observed behaviors?
- o **Provide background and rationale for methodologies that are unfamiliar for your readers**. Very often in the social sciences, research problems and the methods for investigating them require more explanation/rationale than widely accepted rules governing the natural and physical sciences. Be clear and concise in your explanation.
- o **Provide a rationale for subject selection and sampling procedure**. For instance, if you propose to conduct interviews, how do you intend to select the sample population? If you are analyzing texts, which texts have you chosen, and why? If you are using statistics, why is this set of statisics being used? If other data sources exist, explain why the data you chose is most appropriate.
- o **Address potential limitations**. Are there any practical limitations that could affect your data collection? How will you attempt to control for potential confounding variables and errors? If your methodology may lead to problems you can anticipate, state this openly and show why pursuing this methodology outweighs the risk of these problems cropping up.

  NOTE: **Once you have written all of the elements of the methods section, subsequent revisions should focus on how to present those elements as clearly and as logically as possibly.** The description of how you prepared to study the research problem, how you gathered the data, and the protocol for analyzing the data should be organized chronologically. For clarity, when a large amount of detail must be presented, information should be presented in sub-sections according to topic.

- Results: The Results (also sometimes called Findings) section in an empirical research paper describes what the researcher(s) found when they analyzed their data. Its primary purpose is to use the data collected to answer the research question(s) posed in the introduction, even if the findings challenge the hypothesis
- Discussion: The purpose of the discussion is to interpret and describe the significance of your findings in light of what was already known about the research problem being investigated, and to explain any new understanding or fresh insights about the problem after you've taken the findings into consideration. The discussion will always connect to the introduction by way of the research questions or hypotheses you posed and the literature you reviewed, but it does not simply repeat or rearrange the introduction; the discussion should always explain how your study has moved the reader's understanding of the research problem forward from where you left them at the end of the introduction.
- Future works (Suggestions for future works)
- Conclusion: The conclusion is an opportunity to succinctly answer the "so what?" question by placing the study within the context of past research about

the topic you've investigated. Demonstrating the importance of your ideas. Don't be shy. The conclusion offers you a chance to elaborate on the significance of your findings

- References.: IEEE style
- Many will also contain Figures and Tables and some will have an Appendix

NOTE: Number of students in each group: 3-4 students.

At the end of the project, you should submit:

- Research paper
- The source code of your system
- The expert system that was designed. (for running purpose)
- A PowerPoint presentation (for In-Class presentation purposes) that contains summary of all the elements in the search.
- Presentation time for each group is 15 minutes, and 15 minutes for discussion.

Due Date:

25 APR.2024