Department of Computer Science and Engineering
University of California at San Diego

CSE 255
Winter 1998

Project 4

DUE AT THE START OF CLASS, TUESDAY MARCH 3.

The assignment here is to write a proposal suggesting the implementation of an expert system for use by some manufacturing organization. Each team should include at least one Advanced Manufacturing student who has returned from an internship. *The proposal should address a real-world situation encountered during an internship or a previous job.*

You should choose an application area for knowledge-based software and outline how the software should work, how it should be developed, how it should be deployed, and how the success of the project should be measured. Your proposal should be about ten pages.

Some of the issues you must take into account are:

- What is the existing factory environment in which the system will be deployed? What are the most critical needs in this environment? Describe the environment following the style of the description of the Ford engine plant on pages 165 to 168 of *Information Technology for Manufacturing: A Research Agenda*, National Academy Press, 1995.
- How does your proposed knowledge-based system fit into the overall picture of how software supports manufacturing presented on pages 84 to 108 of *Information Technology for Manufacturing: A Research Agenda*?
- Who is (or are) the specific human decision maker(s) or expert(s) whose knowledge will be captured? Why is it important to do this? Will potential users of the system be cooperative?
- Give a short description of a similar successful existing system (with bibliographic references) that imparts confidence that your proposed system is feasible.
- Describe at a high-level the flow of information in the automated decision-making process. Distinguish between data and knowledge. Sketch some sample inputs and outputs.
- Discuss requirements for each of the following components of the system: any database(s) that the system will exchange information with; the knowledge base of the system; its inference engine; the user interface; and documentation.
- Give a plan for doing knowledge acquisition for the system. Consider acquiring knowledge both from the expert(s), and from studying the environment in which the expert(s) operates.
- Describe how and by whom the correctness of the system will be defined and verified.
- Describe how and by whom the system will be maintained.
- What risks does the project face, i.e. what is most likely to go wrong? How can you minimize these risks?

The list of issues above is not necessarily exhaustive.