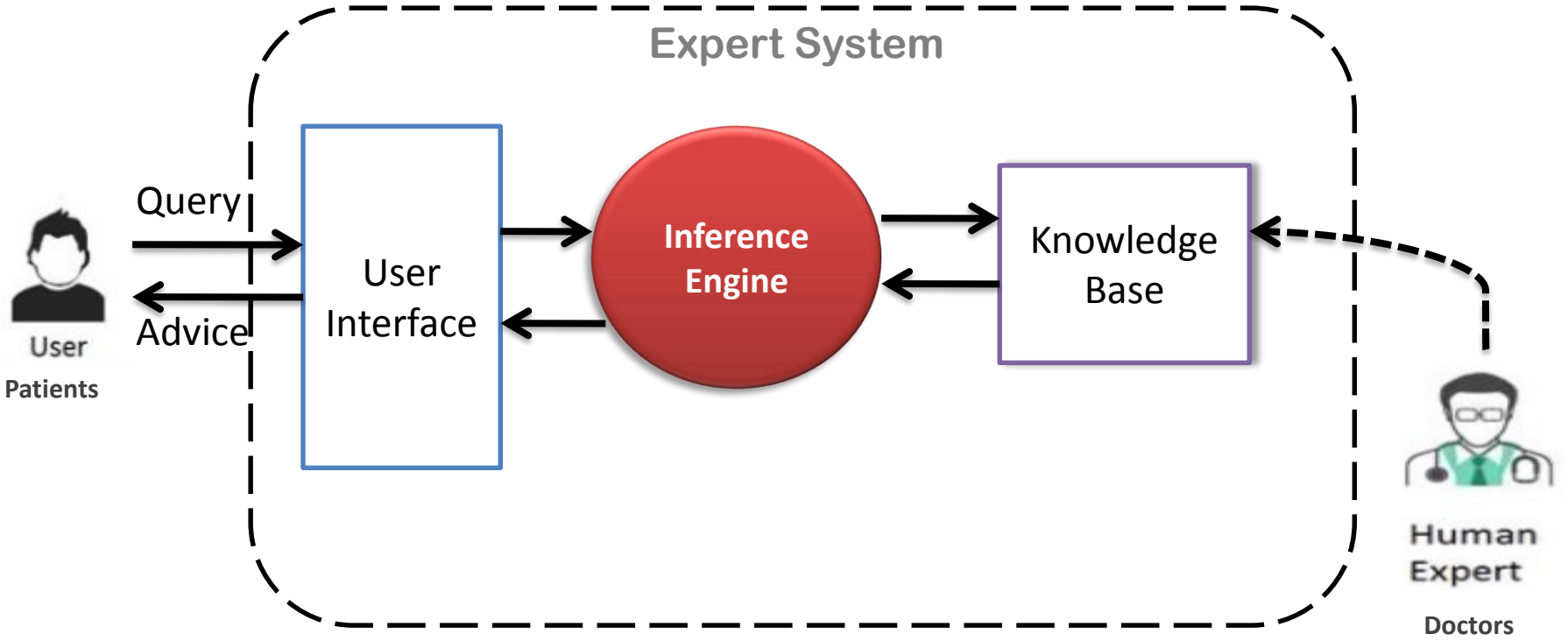
MYCIN (AN EXPERT SYSTEM)



MYCIN (AN EXPERT SYSTEM)

- MYCIN was an earliest designed expert systems in Stanford University in 1970s to diagnose and recommend treatment for certain blood infections.

- MYCIN was written in LISP Programming Language.

- MYCIN is mainly **a goal-directed system, using the backward chaining reasoning** approach.

- Mycin was developed partly in order to explore how human experts make(expert doctors) rough (but important) guesses based on partial information. However, the problem is also a potentially important one in practical terms - there are lots of junior or non-specialised doctors who sometimes have to make such a rough diagnosis, and if there is an expert tool available to help them then this might allow more effective treatment to be given.

➢Mycin represented its knowledge as a set of IF-THEN rules with certainty factors.
The following is an English version of one of Mycin's rules:

IF the infection is pimary-bacteremia
AND the site of the culture is one of the sterile sites
AND the suspected portal of entry is the gastrointestinal tract
THEN there is suggestive evidence (0.7) that infection is bacteroid.

The 0.7 is roughly the certainty that the conclusion will be true given the evidence.
If the evidence is uncertain the certainties of the bits of evidence will be combined with the certainty of the rule to give the certainty of the conclusion.

- MYCIN was never actually used in practice. This wasn't because of any weakness in its performance. As mentioned, in tests it outperformed members of the Stanford medical school faculty. Some observers raised ethical and legal issues related to the use of computers in medicine — if a program gives the wrong diagnosis or recommends the wrong therapy, who should be held responsible?

- MYCIN has been popular in expert system's research, but it also had a number of problems or shortcomings because of which a number of its derivatives like NEOMYCIN developed.

EMYCIN (An expert system shell)

- EMYCIN provides a domain-independent framework or template to develop expert system.

- EMYCIN stands for “Empty MYCIN” or “Essential MYCIN” because it basically constitutes a MYCIN system minus its domain-specific medical knowledge.

Some characteristics of EMYCIN are:

• It constitutes an abbreviated rule language, which uses ALGOL-like notation and which is easier than LISP and is more concise than the English subset used by MYCIN.

• It uses backward chaining which is similar to MYCIN.

• It indexes rules, in-turn organising them into groups, based on the parameters which are being referenced.

• It has an interface for system designer which provides tools for displaying, editing and partitioning rules, editing knowledge held in tables, and also running rule sets on sets of problems. As part of system designer's interface, EMYCIN also included a knowledge editor (a program) called TEIRESIAS whose job was to provide help for the development and maintenance of large knowledge bases.

• It also has a user interface which allows the user to communicate with the system smoothly.