Developing Knowledge Systems for Social Science Research

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What is knowledge system?

- A computer system relying primarily on domain-specific knowledge for problem-solving
- also called expert system or knowledge-based system

Types and possible application (1)

- 1) interpretation of data - data mining and statistical analysis
- 2) Diagnosis - diagnose systems
- 3) **Decision support -** in IR or in public administration
- 4) Control - for eGovernment

Types and possible application (2)

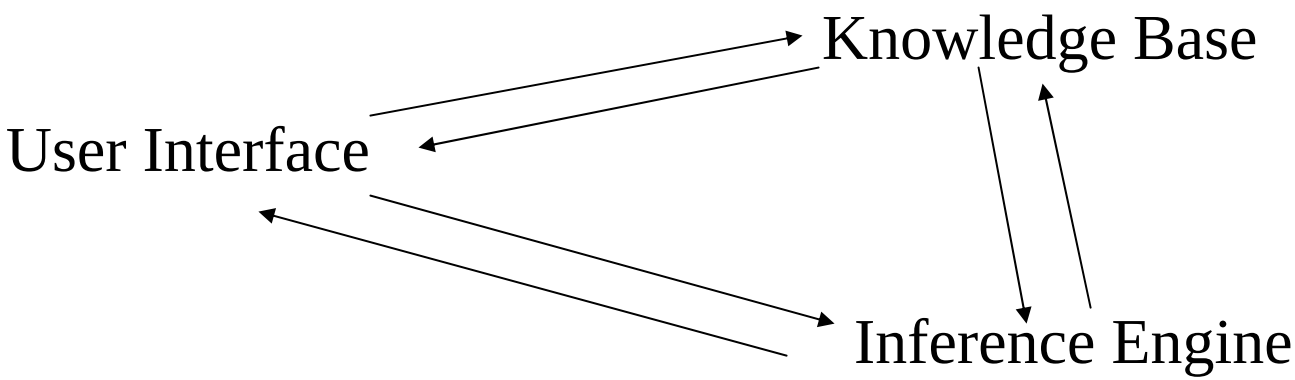
- 5) Prediction
- 6) **Campaign (marketing)**
- 7) Human resource management
- 8) **e-Learning (training)**

Special RM Systems

- A system to bridge formal theories with empirical research
- A system to bridge decision-making with empirical research
- A system to optimize campaign results

Components

- User interface
- Knowledge base
- Inference engine
- (input, output, editor, …)



Tools to Build Knowledge Systems

- Use programming language: Prolog, LISP or C++
- Use SHELLs - shell is an expert system without knowledge base (or a bundled package containing an inference engine and a user interface)
- Use SDKs - software development kits

Representing Knowledge

- Rules based (forward chaining, backward chaining)
- Meta knowledge
- Semanic network
- frame hierarchies
- blackboard
- case-based

Building Process

- Problem description
- Knowledge representation selection
- User interface design
- Customization
- Initial prototype