Career Guidance Expert System

Description:

Build an expert system that recommends a potential field of career based on a user's skills provided in natural language. The system will take free-text input such as “I like solving problems and working with computers” or “I enjoy helping people and organizing events,” and use Natural Language Processing (NLP) techniques to extract structured data like hard skills, and soft skills. By analyzing both hard and soft skills alongside the candidate's field of expertise, the system will infer optimal job matches, enhancing the efficiency of the job-seeking process. The Career Guidance expert system combines NLP with knowledge representation techniques and reasoning to intelligently suggest career field options. The system should be capable of handling tasks like tokenization, lemmatization, and stemming to accurately interpret and understand symptoms from natural language queries.

A rule-based inference engine will then match these to possible career options, along with suggested qualifications or courses. To implement this method, suitable libraries such as Experta, Kanren, or others can be used.

Dataset Overview:

Each entry in the dataset includes the following fields:

1. **hard_skill:** A list of technical or domain-specific skills possessed by the candidate (e.g., 'data analysis', 'project management').
2. **soft_skill:** A list of interpersonal or cognitive skills (e.g., 'teamwork', 'problem solving').
3. **label:** A binary indicator (0 or 1) denoting whether the candidate is a suitable match for a particular job role.
4. **candidate_field:** The professional domain or industry of the candidate (e.g., 'healthcare & medical', 'marketing').

Run Example

Input: "I have experience in nursing, registration, and service. I am also good at written communication."

Output: A suitable candidate field for you would be healthcare & medical.

Expected Output

- An expert system designed to analyze candidates' skills and recommend suitable job roles based on language processing and skill matching.

Mentor:

A.L. Samar Aly

Email: samar.aly@cis.asu.edu.eg