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An Innovative Approach for Expert Opinion Disease Mining

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Abstract
Machine Intelligence plays an important role in the development of expert systems in medical diagnosis. Most people suffer from many diseases, such as diabetes, heart problems, etc. The diagnosis of every disease can be done by an expert through a questionnaire or through clinical data. We considered both approaches to design the proposed expert system for the diagnosis of any disease. For that machine learning approaches are required. The major AI problems for the development of this system involve choices of knowledge representations, diagnostic interpretation strategies, and treatment planning strategies. In both diagnosis and treatment decisions. An important insight that has resulted from the design of several artificial intelligence systems is that robustness of performance in the presence of many uncertain relationships can be achieved by eliciting from the expert a segmentation of knowledge that will also provide a rich network of deterministic relationships to interweave the space of hypotheses.

Keywords: *Intelligent medical treatment, consultation system optimization, convolutional neural network, Expert Systems, Medical Diagnosis, and Machine Intelligence algorithms.*

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I. INTRODUCTION

Artificial Intelligence (AI) is a branch of computer science, which focuses on the development of computer programs that can solve problems that require human-like technologies (such as a doctor, pathologist, lawyer, etc.). The first professional programs were created in the 1970s and expanded in the 1980s. Professional systems were among the first truly successful types of AI software.

With the development of artificial intelligence technology, the use of artificial intelligence in traditional industries continues to increase. In the medical and healthcare industry, the scope of practical intelligence includes many sub-fields such as medical records, prevention, diagnosis, and treatment. Among them, ‘‘artificial intelligence assisted by diagnosis ’’ is one of the most widely used forms of artificial intelligence in the medical field. A diagnostic-assisted diagnostic program is a 'smart medical assistant' 'developed based on practical artificial intelligence and can assist clinicians in diagnosing and making decisions such as setting a focus, diagnosing diseases, and choosing a successful Performance Implementation program. an assisted diagnostic system can have a diagnostic power equal to that of a professional level. The development of smart artificial intelligence diagnostic systems is entering the white-hot phase, but there is still a long way to go before the common use of intelligent artificial intelligence diagnostic systems in the medical industry.

II. LITERATURE SURVEY/EXISTING SYSTEMS

1. AAPHelp: De Dombal's system for acute abdominal pain (1972).Early attempt to implement automatic closure under uncertainty. Developed at the University of Leeds, DeDombal's system was designed to help diagnose acute abdominal pain and the need for analysis-based surgery. The system's decision-making was based on the naive Bayes approach.

2. INTERNISTI I (1974): People and Myers began work on INTERNIST, one of the first clinical decision support systems developed to assist in diagnosis, in 1970. INTERNIST was a rule-based expert system developed at the University of Pittsburgh in 1974 to diagnose complex problems in general internal medicine. Use patient observations to derive a list of compatible medical conditions (based on a tree-structured database that links the disease and symptoms). In the early 1980s, it was recognized that the most

valuable product of the system was its medical knowledge base. It is used as the basis for successor systems such as the Caduceus and Quick Medical Reference (QMR), a commercial diagnostic DSS for internists.

3. MYCIN: Medical diagnosis according to manufacturing rules The Expert System (ES) was introduced by researchers at the Stanford Heuristic Programming Project. This includes the "father of expert systems" Edwards Feigenbaum and the DENDRAL and MYCIN systems. Key contributors to this technology were Stanford University's Bruce Buchanan, Edward Short Life, Randall Davis, and William van Mell Crileli Scott. Research is also very active in France, with researchers focusing on the automation of logic and logic machines. Developed in 1972, the French computer language Prolog represents a true advance in expert systems such as DENDRAL and MYCIN. This is a shell, a software structure that is ready to receive and run expert systems. It integrates the engine with First Order logic, rules, and facts. It is also a declarative language. A tool for mass production of expert systems. Since then, it has become more likely to become the best-selling AI language in the world. However, Prolog is not very user-friendly and uses first-order predicate logic that is far from human logic.

In the 1980s, expert systems became widespread because they were recognized as a practical tool for solving real-world problems. The university offers expert systems courses, and two-thirds of Fortune 1000 companies have applied this technology to their day-to-day business activities. Expert systems have gained international popularity in Japan's 5th Generation Computer Systems project and have increased research funding in Europe. Growth in this area continued until the 1990s. Today, it is offered in a variety of forms, from medical diagnostics to plant analysis, consulting to production control.

III. WORKING PRINCIPAL

The professional program usually consists of four main components:

1. Knowledge Base: This is information in a professional program, coded on how the system can be used. It is developed by a specific combination of people (e.g., information engineer) and an automated learning program (for example, which can learn through analysis of good examples of professional performance).

2. Problem Solver: This is a combination of algorithms and heuristics designed to use a knowledge base in an attempt to solve problems in a particular field.

3. Communicator: This is designed to facilitate proper interaction with both professional system developers and hehe professional system users.

4. Description and Assistance: This is designed to provide user assistance as well as provide detailed explanations of the "what and why" of professional system functions as they work to solve the problem.

Research into the use of artificial intelligence began in the early 1970s and produced a number of experimental programs. To date, there are many special programs designed to diagnose various types of diseases. Specialist diagnostic and therapeutic systems have been developed for use in a variety of medical conditions:

• **Doctors -** hospital doctors, nurses, doctors, coordinators, A&E centers, operating theaters, but also the elderly domestic workers, sometimes parents, patients themselves

• **Basic functions -** diagnosis, prognosis, treatment, monitoring

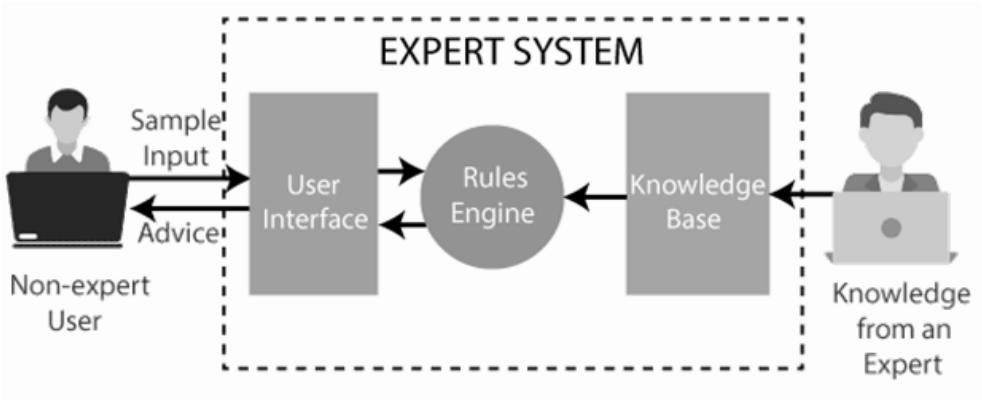


Fig. System Architecture

IV. SYSTEM DESIGN:

Implementation Details (Modules): For the Development of this application, we need to develop the following modules:

Admin Module:
It manages all Master entries.
Manage Experts.

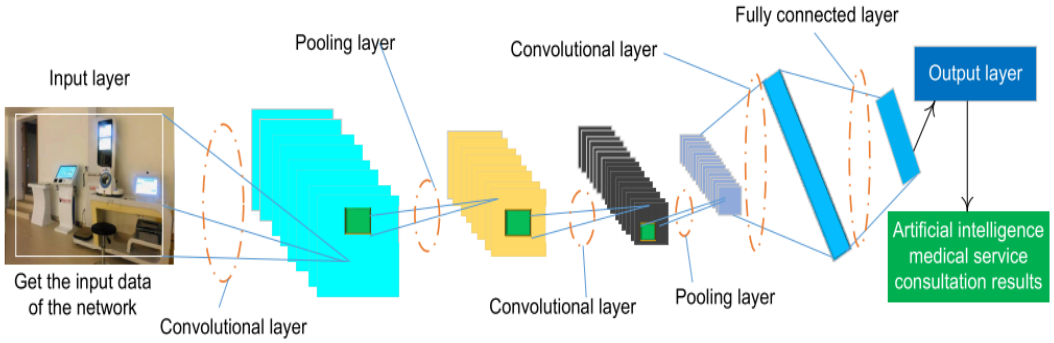
Doctor / Expert Login:
Train Patient information
Train disease parameters.
Train Treatment required i.e. expert opinion.

User Module :
Ask query to an expert system.
View the result on the provided query.

V. ALGORITHMS

Convolutional Neural Network (CNN)

Convolutional Neural Network (CNN) is an in-depth Learning algorithm that can take a captured image, assign value (readable weight and bias) to various aspects/elements in an image, and be able to distinguish one from the other. The initial processing required for ConvNet is very low compared to other partitioning algorithms. While in ancient ways filters are made by hand, with enough training, ConvNets can read these filters/symbols.



- Transformation Work
- RELU layer
- Integration
- Placing
- Full Communication

VI. APPLICATIONS

Medical College: This system helps students study at medical colleges on a large scale. Practitioner Physicians / Medical: New future physicians can benefit from the trained information of medical professionals.
Legal Department: Legal proceedings can get expert opinion by providing case details from different angles to predict outcomes.
Pharmacists: Pharmacists use such systems to convey knowledge to existing people. **Financial Industry:** Used in the financial industry to detect all types of fraud and suspicious activity and advise banks on whether to lend to businesses.

VII. ADVANTAGES

• Improved accuracy: Better accuracy compared to existing system.
• User-friendly GUI: The program comes with simple and easy-to-use controls.
• Fast Processing Production Report
• These programs can be reproduced.
• Can be used in all areas where human presence is not available.
• The functioning of these systems remains stable as they are not affected by emotions, tension, or fatigue.
• They give a very high speed to answer a particular question.

VIII. LIMITATIONS

• If the knowledge base contains incorrect information, the expert system's answer may be incorrect.
• You can't generate creative output in different scenarios like humans do.
• Maintenance and development costs are very high.
• It is much more difficult to acquire knowledge of design.
• A specific ES is required for each domain. This is one of the main limitations.
• It cannot be learned from itself and must be updated manually.

IX. CONCLUSION

This review paper describes the various specialist programs in medical diagnosis and examines the contributions made by different researchers. Some researchers have evaluated their clinical practice plans for specialists and have identified various parameters such as accuracy and precision. Using these parameters, they have calculated the performance of their professional systems. The accuracy and other parameters of the expert system depend on the knowledge base. The knowledge base should have the right information. There should be pressure on access to information, the stage where information is collected. So the effectiveness of a professional program depends on all these factors. One can increase the performance of professionals system by making the knowledge base more accurate and very little work done using neuron-fuzzy, ANN, and abstract thinking in medical diagnosis. So we will go to this for a medical diagnosis

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