

## A Review Paper on Expert System for Diagnosis of Psychological Disease

Nirmala Shinge.

(Sinhgad Institute, Nivrutti Babaji Navale College of Commerce And Science, Lonavala)

Dr. B. T. Jadhav

(Rayat Institute of Research and Development , Satara)

### Abstract

Expert systems (ES) creative branch of AI System. An expert system influence be an automatic processing system that follows the decision-making ability of an individual's competence. It uses Artificial Intelligence technologies to make the choice and behavior of somebody's or an association that has professional data and data during a selected field. The quality of the professional system depends on its content. This paper the author describes a review past work carried by researchers that have been connected with a professional system for psychology malady.

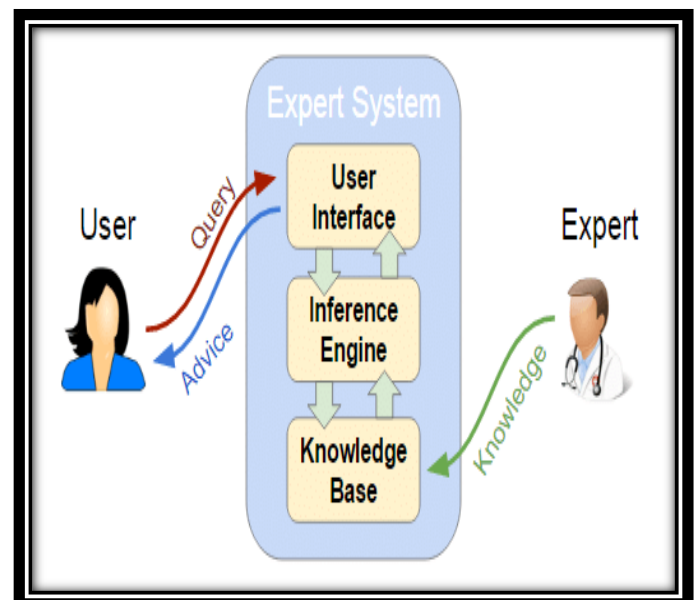
**Keywords:** AI, Expert System, Psychology disease.

### Introduction

In expert systems, Knowledge is transferred from the experts of each field to the computer system. Among the areas of designing and presenting these systems are Mathematics, financial deciding, Sociology, astronomy Philosophy, Computer Science, Healthcare, Neuroscience, etc.The Psychological disease may be a common and thoughtful medical disease that depressingly disturbs your feelings, you think, and your routine.Now a days expert systems are utilized in many fields for deciding. It runs as an expert and supplies the proficiency decision and support for complex deciding.The expert system is used mainly in diagnosis, professional deciding, strategy making,analysis,

etc.Expert systems use the information of human experts to unravel real-life problems were generally the effect of human brainpower.

### Component of Expert System



### General Architecture of Expert system

#### Knowledge Base

Knowledge Base Knowledge contains information, data, and past expertise combined along. The knowledge base contains domain-specific and high-quality data. The knowledge base of associate knowledgeable System has 2 elements.

- Factual data –It is Domain task data.
- Heuristic data -Data it's correct judgment, one's talent of study, practice, and shot data.

### Inference Engine

The inferences' engine is to fetch the connected data from the knowledge base, realize it, and to look out a solution relevant to the user's question. The interference engine obtains the foundations from its knowledge base and applies them to the famed facts to infer new facts. Engines can also embrace a symbol and debugging talents.

- **Forward Chaining** -The interference Engine follows the conditions and roots and eventually shows the result.
- **Backward Chaining**- The Inference Engine goes to seek out which situations could have occurred within the past for this outcome.

### User Interface

The user interface provides interaction between the user of the professional System and thus the professional itself. It's language process thus on be utilized by the user understands the task domain. The user of the knowledgeable System needn't be essentially knowledgeable in AI.

### Application of Expert System



### Existing Expert system

- ❖ MYCIN Expert system was developed in the medical field in early 70s for especially meningitis and bacterial septicaemia. A patient detecting bacteria affecting diseases. In 1972 work initiated on MYCIN at Stanford University in California. MYCIN plan to diagnose patients supported reported symptoms and medical test results. The program could request further information concerning the patient, also as suggest additional laboratory tests, to achieve a possible diagnosis.
- ❖ INTERNIST/CADUCEUS project is the study of models for diagnosing diseases in general medicine. It focused on given the symptoms, clinical signs, and therefore the lab. Tests obtained from the patient. An internist is an investigational computer software package capable of creating and complete diagnoses in general medicine. it's supported the knowledge-based system. Its evaluation is on a series of 19 clinic pathological exercises
- ❖ DENDRAL expert system was developed in 1965 by the AI researcher Edward Feigenbaum and Joshua Lederberg of Stanford University in California. Its full name was Heuristic DENDRAL but later it's called DENDRAL. This was a chemical-analysis expert system. DENDRAL described the substance's molecular structure. DENDRAL's performance was useful for chemist's expert so this program was utilized in industry.
- ❖ PXDES – It means Pneumoconiosis X-Ray Diagnosis Expert System. it's an expert system which is employed to diagnose carcinoma diseases. It takes a patient's lunge image from the top of the

body. The shadow-image is employed to work out the sort also like a degree of carcinoma. This system supported three kinds of the knowledge domain, Explanation Interface, and Knowledge acquisition. knowledge domain represents the info of X-ray representation of varying stages of the disease.

- ❖ CaDet -Computer-based clinical decision network shortened as CaDet.It is additionally used for early cancer diagnose. Clinical data associated with early cancer detection to cancer risk factors are collected together within the database and with heuristic rules, this data is evaluated for early cancer detection. This expert system collected individual data from patients using the

questionnaire and gave this input into CaDet. A report contained patient data and cancer assumptions.

- ❖ DXplain –It may be a decision network including a group of medical outcomes like symptoms, symbols, and laboratory data to make a categorized list of diagnoses. It provides a rationalization for diseases for identification.
- ❖ CADINO - "Computer-Aided Diagnosis in Neurology (CADINO)" expert system is employed for dizzy patients. CADINO developed during scientific research. It is capable of creating diagnoses in patients with vertigo. CADINO uses quite 100 reasons for vertigo. Microsoft Office using hyperlinks technics are used for development.

### Review of Research Paper

Author Name	Techniques Used	Computer Technology	Input	Remark
Ahmad A. Al-Hajji1, Nouf S. AlHarbi and Fatimah M. AlSuhaibani[1]	Backward chaining	PHP, JavaScript, CSS, and HTML	symptoms of the patients	The system will classify the disease and recommend treatment.
Luciano CominNunes; PlacidoRogérioPinheiro; TarcísioCavalcante Piquing 2009 IEEE[2]	Neural networks, intelligent agents, case-based reasoning, symbolic logic andGenetic Algorithms	Software HIVIEW software Expert SINTA	symptoms of the patients	Multi-Criteria Decision Analysis (MCDA)Algorithm for Diagnosis of psychological disorders
RozitaYatiMasri; Hajar Mat Jani (2012)[4]	Rule-based reasoning, symbolic logic, and fuzzy-genetic algorithm (fuzzy-GA)	Not Mention	symptoms of the patients	The psychological state Diagnostic Expert System (MeHDES)
Ali Mirzapur	Rule-Based	MATLAB	User responses	The intelligent

EJMED, June 2019[5]				and semi-intelligent systems like expert systems are often used as a choice network
LalaSeptemRiza, EkaFitrajayaRahman, Mila Pardini, and Rasim [6]	Fuzzy Rule Fuzzification, inference, and classification.	PHP and therefore the R programming language	symptoms of the patient's	Accuracy of the result and computation time are 84.85% and 0.0133 seconds, respectively.
ParamaresthiWindriyani, S. I. Kom, Sari Widyasihwi 2013[7]	Forward Chaining method	MINI ICD-10	symptoms of the patients	The accuracy value of this technique is 96%, which is calculated by comparing the expert system's result
B.Ruiz-MezcuaA.Garcia-CrespoJ.L.Lopez-CuadradoI.Gonzalez-Carrasco[8]	Artificial Intelligent	Not Mention	Not Mention	The development of web-based expert systems
Hassan MohammadiMotlagh, Ali Akbar ParviziFardand BehrouzMinaei[9]	fuzzy Delphi method	Java	symptoms of the patients	The proposed system appears helpful for everybody, from ordinary persons to specialists in medical environments.
Victor E. Ekong Udoinyang G. Inyang Emmanuel A. Onibere[10]	Fuzzy Logic	Not mention	25 symptoms of the patients	The 5 best-matched cases are subjected to the emotional filter of the system for diagnostic deciding
Yue-ShanChanga, Chih-TienFanbWin-TsungLo, cWan-ChunHunga, Shyan-MingYuan[11]	Bayesian network	Android	Not Mention	It is useful for inferring a diagnosis of depression
Robbi Rahim,	Case-Based	Not	74 symptoms of	Development of

WindaniaPurba, MufidaKhairani, and R Rosmawati (2015)[12].	Reasoning Method	Mention	the patient's	this the expert system can help to understand the mental disorder
Izzeddin A., Hosni Qasim,El-ashharawi, Samy S. Abu-NaserI,Alshawwa and Mohammed Elkahlout[13]	Rule-Based	SL5 Object Expert System language.	symptoms of the patients	The planned knowledgeable system is incredibly helpful for a man of science, patients, and graduated man of science.

### Conclusion and Future Work

During this paper, the authors have got to present a current review of the foregoing research work administered by researchers within the field of an expert system for diagnosis of psychology. The authors have reached with the conclusion that many expert systems will be benefit patients, psychiatric improving access to superiority services. Relationship with expert systems that serve to support psychological state care experts in deciding complicated diagnosis. Relationship with expert systems that serve to support psychological state care experts. With this conclusion, the authors have decided to develop an expert system for diagnosis and suggest treatments as per the level of psychological disease.

### References

1. Ahmad A. Al-hajji, Fatimah M. Alsuhaibani And Nouf S. Alharbi“Online Knowledge-based Expert System (Kbes) For Psychological Diseases Diagnosis” DhinaharanNagamalai et al. (Eds) : COSIT, AIAPP, DMA, SEC - 2019 pp. 57–71, 2019. © CS & IT-CSCP 2019 DOI: 10.5121/csit.2019.90206
2. Luciano CominNunes; PlácidoRogérioPinheiro; TarcísioCavalcantePequeno “An expert system

applied to the diagnosis of psychological disorder” IEEE International Conference on Intelligent Computing and Intelligent Systems 2009

3. Zhiliang Wang ; Yanling Zhao ; ChunhuiHao; M. Nagai ; G. Cui “An expert system of commodity choose applied with artificial psychology” IEEE International Conference on Systems, Man and Cybernetics.2001
4. RozitaYatiMasri; Hajar Mat Jani“Employing artificial intelligence techniques in Mental Health Diagnostic Expert System”International Conference on Computer & Information Science (ICCIS) 2012
5. Ali Mirzapour“A Psychology Expert System to Determine the Level of Stress in Subjects” EJMED, European Journal of Medical and Health Sciences Vol. 1, No. 2, June 2019
6. LalaSeptemRiza, Mila Pradini, EkaFitrajayaRahman, and Rasim“An Expert System for Diagnosis of Sleep Disorder Using Fuzzy Rule-Based Classification Systems.”The International Conference on Information Technology and Digital Applications IOP Conf. Series: Materials Science and Engineering185(2017)
7. ParamaresthiWindriyani, S. I. Kom, Sari WidyaSihwi“Expert system for detecting mental disorder with Forward Chaining method.”



International Conference on ICT for Smart Society Publisher: IEEE (2013)

8. B.Ruiz-Mezcua A.Garcia-Crespo J.L.Lopez-Cuadrado I.Gonzalez-Carrasco

“An expert system development tool for non AI experts Expert Systems with Applications” Volume 38, Issue 1, Pages 597-609, January 2011

9. Hassan Mohammadi Motlagh , Behrouz Minaei , Ali Akbar Parvizi Fard

“Design and implementation of a web-based fuzzy expert system for diagnosing depressive disorder” *Applied*

*Intelligence* volume 48, pages 1302–1313 (2018)

10. Victor E. Ekong Udoinyang G. Inyang Emmanuel A. Onibere “Intelligent Decision Support System for Depression Diagnosis Based on Neuro-fuzzy-CBR Hybrid” *Modern Applied Science*; Vol. 6, No. 7; ISSN 1913-1844 E-ISSN 1913-1852 Published by Canadian Center of Science and Education 2012

11. Yue-Shan Chang<sup>a</sup> , Chih-Tien Fan<sup>b</sup> Win-Tsung Lo, <sup>c</sup>Wan-Chun Hung<sup>a</sup>, Shyan-Ming Yu an “Mobile cloud-based depression diagnosis using an ontology and a Bayesian network” *Future Generation Computer Systems* Volumes 43–44, Pages 87-98 February 2015,

12. Robbi Rahim , Windania Purba , Mufida Khairani , and R Rosmawati “Online Expert System for Diagnosis Psychological Disorders Using Case-Based Reasoning Method” *The 1st International Conference on Engineering and Applied Science Journal of Physics: IOP Publishing Conference Series* 1381 (2019) 012044

13. Izzeddin A. Alshawwa, Mohammed Elkahout, Hosni Qasim El-Mashharawi, Samy S. Abu-Nase “An Expert System for Depression Diagnosis” *International Journal of Academic Health and Medical Research (IAHMR)* ISSN: 2000-007X Vol. 3 Issue 4, April – 2019, Pages: 20-27

14. Ahmad A Al-Hajji “Rule-Based expert system for diagnosis and symptom of neurological disorders” *Proceedings of the 1st Taibah University International Conference on Computing and Information Technology*, volume 1214 (2012)

15 R Komal, Vijay S Hole, Gulhane “Rule-Based Expert System for the Diagnosis of Memory Loss Diseases” *IJISSET -International Journal of Innovative Science, Engineering & Technology*, volume 1 2014

16 Rajdeep Borgohain, Sugata Sanyal “Rule based expert system for diagnosis of neuromuscular disorders” *Int. J. Advanced Networking and Applications* 1511 Volume:04 Issue:01 Pages:1509-1513 (2012) ISSN : 0975-0290

18. Book Knowledge-Based Systems

19. Jacob Fuchs, M.D., a Israel Heller, M.D., b Marcel Topilsky, M.D., and Moshe Inbar, M.D. “CaDet, a Computer-Based Clinical Decision Support System for Early Cancer Detection” © 1999 International Society for Preventive Oncology Cancer Detection and Prevention, 23(1):78–87 (1999)

20. <https://skillville.in/blog/ai-expert-systems-for-medical-sciences/>

21. [https://en.wikipedia.org/wiki/Expert\\_system](https://en.wikipedia.org/wiki/Expert_system)

22. [https://www.tutorialspoint.com/artificial\\_intelligence/artificial\\_intelligence\\_expert\\_systems.htm](https://www.tutorialspoint.com/artificial_intelligence/artificial_intelligence_expert_systems.htm)

23. <https://www.javatpoint.com/expert-systems-in-artificial-intelligence>

24. <https://www.sciencedirect.com/topics/computer-science/artificial-intelligence>

25. *Artificial Intelligence- A Guide to Intelligent Systems.pdf*

26. <https://medium.com/@rinu.gour123/what-is-expert-system-in-artificial-intelligence-how-it-solve-problems-83bbaf3f93c3>.

27. <https://www.grin.com/document/213082>

28. <https://www.mygreatlearning.com/blog/expert-systems-in-artificial-intelligence/>

29. [https://en.wikipedia.org/wiki/Expert\\_system](https://en.wikipedia.org/wiki/Expert_system)