

A Rule-Based Expert System for Mental Disorder Diagnosis

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Introduction & Motivation

- Around 12.5% of the global population suffers from mental disorders, with depression and anxiety most common.
- Causes include genetics, stress, trauma, and socio-environmental factors.
- Diagnosis is challenging due to overlapping symptoms, stigma, and limited access to professionals.





Proposed System

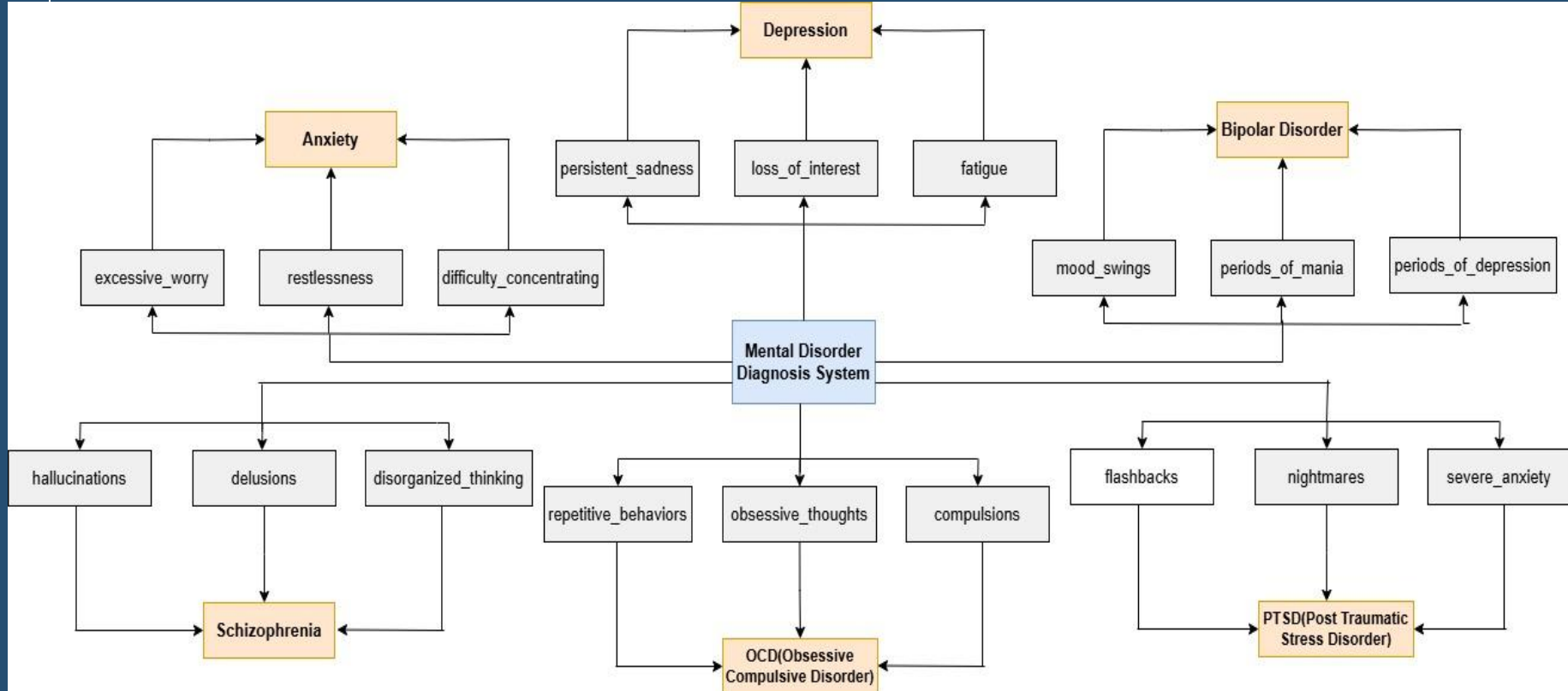
To address the challenges of diagnosing mental disorders, we proposed a rule-based expert system focusing on six conditions: Depression, Anxiety, Bipolar Disorder, Schizophrenia, OCD, and PTSD. The system engages users through yes/no questions for symptom evaluation, ensuring a transparent, structured, and reliable diagnostic process.

Objectives

- ❖ **Automate the evaluation process for efficiency.**
- ❖ **Provide accessible diagnostic tools for professionals and underserved regions.**
- ❖ **Minimize misdiagnosis with preliminary insights.**

Knowledge Representation

Symptoms Associated with Disorders





How Our Expert System Works



User

Yes/No Response



Predicted Disorder

Our Expert System

Inference Engine

Knowledge Base

Snapshots of Outputs

DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Progra...

Files Edit Run Compile Options Setup

Editor

Line 16 Col 47 C:\CODE\PROJECT.PRO Indent

```
response(char)
go

clauses
go :-
  write("What is the name of patient?"),
  readln(Patient),
  hypothesis(Patient,Disease),
  write(Patient," probably has ",Disease,"."),

go :-
  write("The disorder could not be determined")

symptom(Patient,persistent_sadness) :-
```

Dialog

```
e determined
Yes
Goal: go
What is the name of pati
ent?mahfuja
Does mahfuja have persis
tent sadness (y/n) ?y
Does mahfuja feel loss o
f interest (y/n) ?y
Does mahfuja feel fatigu
e (y/n) ?y
mahfuja probably has dep
ression.
Yes
Goal:
```

Message

Trace

hypothesis
symptom
response
go

F2-Save F3-Load F5-Zoom F6-Next F8-Previous goal Shift-F10-Resize F10-End

DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Progra...

Files Edit Run Compile Options Setup

Editor

Line 16 Col 47 C:\CODE\PROJECT.PRO Indent

```
response(char)
go

clauses
go :-
  write("What is the name of patient?"),
  readln(Patient),
  hypothesis(Patient,Disease),
  write(Patient," probably has ",Disease,"."),

go :-
  write("The disorder could not be determined")

symptom(Patient,persistent_sadness) :-
```

Dialog

```
Does mahfuja have excess
ive_worry (y/n) ?n
Does mahfuja have mood s
wing (y/n) ?n
Does mahfuja have halluc
ination (y/n) ?y
Does mahfuja have delusi
ons (y/n) ?y
Does mahfuja have disorg
anized thinking (y/n) ?y

mahfuja probably has sch
izophrenia.
Yes
Goal:
```

Message

Trace

```
symptom
response
go
Save C:\CODE\PROJECT.PRO
```

F2-Save F3-Load F5-Zoom F6-Next F8-Previous goal Shift-F10-Resize F10-End



Future Work

- **Include therapy recommendations.**
- **Expand knowledge base and symptom coverage.**
- **Improve user interface with graphical enhancements.**
- **Personalize diagnosis with medical history integration.**

Thank You