

Mental Health Survey Classifier – Project Documentation

1. Project Overview

This web-based application aims to provide users with an anonymous mental health self-assessment tool based on the PHQ-9 questionnaire. It uses a logistic regression classifier to evaluate potential signs of depression based on user input. The application is developed using Flask and integrates a custom machine learning model written in Python using NumPy.

2. Features

- User Authentication (Login/Register)
- Role-based access (User/Admin)
- PHQ-9 Survey Form (5 questions subset)
- Custom Logistic Regression Model
- AI-based mental health prediction
- Admin dashboard to manage users
- Profile editing (planned)
- Result sharing with user consent (optional)
- Custom error pages (planned)
- Responsive UI with Bootstrap 5

3. Technologies Used

- Python 3.x
- Flask
- Flask-WTF
- Flask-Login
- SQLAlchemy
- SQLite / MSSQL (via pyodbc)
- NumPy (for custom ML)
- Bootstrap 5
- HTML/CSS

4. Project Structure

```
/mental-health-classifier
|
├── app/
|   ├── __init__.py
|   ├── models.py
|   ├── forms.py
|   ├── routes/
|   |   ├── auth.py
|   |   ├── main.py
|   |   └── admin.py
|   └── templates/
├── ai/
|   └── logistic_custom.py
├── static/
├── tests/
├── run.py
└── config.py
```

5. Installation & Usage

1. Clone the repository.
2. Set up a virtual environment:
`python -m venv .venv`
3. Activate the environment:
- Windows: `.venv\Scripts\activate`
4. Install dependencies:
`pip install -r requirements.txt`
5. Configure database in `config.py`
6. Run the app:
`python run.py`

6. AI Model

The application uses a custom Logistic Regression model implemented in NumPy. The model is trained with dummy or user-provided PHQ-9-style data and used to predict binary outcomes (1 = signs of depression, 0 = no signs).

7. Limitations & Future Work

- Currently using dummy data instead of real datasets.
- Needs proper model training and evaluation metrics (accuracy/confusion matrix).
- Missing unit tests.
- Email verification and profile page editing are not implemented yet.
- Admin UI could be expanded.
- No deployed version (localhost only).

8. Author & License

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