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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