DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

HOLY GRACE ACADEMY OF ENGINEERING

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ADD334 MINI PROJECT ABSTRACTS

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AI & DATA SCIENCE

HOLY GRACE

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ABSTRACT 1

AI Support System Optimization

Introduction :-

This project presents an AI-powered support system that provides accurate, document-based answers instead of generic chatbot responses. Company documents are converted into knowledge chunks, embedded as vectors, and stored for semantic search. When a user asks a question, the system retrieves the most relevant content and generates precise replies using a retrieval-augmented approach. This reduces API usage, improves reliability, and keeps answers aligned with real organizational information. The system supports both guest and logged-in users, offers easy document updates, and can be adapted to any company's support needs. This project aims to build a universal package as an Ai support system by optimization and modularity.

Software & Hardware Requirements: -

Software Requirements

- Python (Backend)
- Flask (Frame work)
- Cloud LLM – using API
- Document Converter & Vector DB modules
- React / HTML frontend (optional)
- Sentence embedding model
- SQL / MongoDB (DataBase)
- VS Code

Hardware Requirements:-

- Desktop or Laptop
- 8gb RAM or more
- Intel i5/AMD equivalent or more

ABSTRACT 2

AI-Based Grocery Expiry Reminder System

Introduction :-

Managing grocery expiry dates manually is often difficult and leads to food wastage and health risks. With increasing use of technology in daily life, there is a need for an automatic system that can identify expiry dates directly from product labels. This project introduces an **AI-Based Grocery Expiry Reminder System** that uses computer vision and a pretrained detection model to locate the expiry-date region, and applies OCR to extract the text accurately. The extracted date is processed and stored in a database, and timely reminders are provided to the user through a simple interface. This system improves the accuracy and convenience of expiry tracking and helps users manage their groceries more efficiently.

Software & Hardware Requirements: -

SOFTWARE REQUIREMENTS

- Python 3 (backend).
- OpenCV – for image preprocessing.
- EasyOCR , MobileNet-SSD to detect label/date area & extract date from images.
- SQLite / mongoDB – to store grocery details.
- Flask – used as the backend framework.
- HTML, CSS, JS – used for the frontend interface.

HARDWARE REQUIREMENTS

- Laptop/PC with Intel i5 / AMD processor.
- Minimum 8GB RAM.
- Webcam or mobile phone camera for capturing images.

ABSTRACT 3

Healthy meal for pregnant women

Introduction :-

A healthy and balanced diet during pregnancy is crucial for the well-being of both the mother and the developing baby. However, many pregnant women struggle to plan appropriate meals due to a lack of awareness about nutritional requirements, food safety, and trimester-specific needs. This project presents an AI-Based Healthy Meal Recommendation System designed to provide personalized diet suggestions for pregnant women. The system collects user inputs such as trimester, dietary preference, nutritional requirements, and health conditions, and generates suitable meal recommendations using a rule-based and content-filtering AI model. The system also highlights foods to avoid, calorie and nutrient values, and suggests balanced meal plans (breakfast, lunch, dinner, and snacks). By providing convenient and reliable diet guidance, this AI solution aims to support better maternal nutrition, reduce complications related to poor diet, and promote a healthier and safer pregnancy experience. The proposed system is simple, efficient, and can be further enhanced through chatbot support and integration with real-time health monitoring systems.

Software & Hardware Requirements: -

SOFTWARE REQUIREMENTS

- Python 3 (Backend)
- Pandas , scikit-learn , numpy
- Flask (Framework)
- HTML,CSS,JS (Frontent)
- Jupyter Notebook / VS Code

HARDWARE REQUIREMENTS

- Laptop/PC with Intel Core i3 / AMD equivalent or higher
- Minimum 4GB RAM
- Windows / Mac OS / Linux

ABSTRACT 4

Ai based mental health companion

Introduction :-

This project aims to build an AI-based mental health companion that interacts with users to assess emotional state and provide supportive responses, self-care suggestions, and motivational guidance. The system uses Natural Language Processing (NLP) to analyze text inputs and predict emotional sentiment (happy, sad, angry, neutral, stressed). Based on the detected emotion, the system provides suitable coping strategies, relaxation techniques, or even motivations to overcome the current mental state. The project mainly targets students facing academic stress, anxiety, or depression, offering safe early-stage support and awareness.

Software & Hardware Requirements: -

Software Requirements

- Python (Backend)
- Flask (Framework)
- Scikit-learn , Numpy , Pandas
- React / HTML frontend (optional)
- Sentence embedding model
- SQLlite / MongoDB
- VS Code

Hardware Requirements:-

- Desktop or Laptop
- 8gb RAM or more
- Intel i5/AMD equivalent or more
- Internet connection