

Comprehensive Key Projects Review

1. IKY Chef Corner Avatar

Short Summary:

An AI-powered interactive avatar that guides users through recipes and cooking techniques. It provides personalized recommendations and supports conversational interactions for a user-friendly cooking experience.

Detailed Description:

IKY Chef Corner Avatar addresses the challenges of finding and following recipes by offering a virtual assistant that simplifies cooking. The system learns user preferences to suggest recipes tailored to their tastes and dietary restrictions. It uses both text and voice to guide users step-by-step, making it accessible for all skill levels.

- **Key Features:**

- Real-time recipe guidance with text and voice support.
- Personalized suggestions based on dietary preferences.
- Multilingual capabilities for global usability.

Technologies & Tools Used:

- **Programming Language:** Python
 - **Backend:** Flask
 - **AI/NLP:** OpenAI GPT-3
 - **Database:** MongoDB
 - **DevOps:** Docker, Kubernetes
-

2. Chat Application

Short Summary:

A robust chat application enabling real-time communication, including features like group chats, file sharing, and secure messaging.

Detailed Description:

This chat platform provides a modern and secure communication solution. Built for both personal and professional use, it supports responsive designs for seamless use across devices. Its secure messaging and group chat features make it a versatile solution for workspaces and social interactions.

- **Key Features:**

- Real-time messaging with WebSocket support.
- File sharing and multimedia support.
- Scalable group chat functionality.

Technologies & Tools Used:

- **Frontend:** React.js
 - **Backend:** Node.js, Express.js
 - **Real-time Communication:** Socket.io
 - **Database:** MongoDB
-

3. Fish Identification

Short Summary:

An image recognition system for identifying fish species, ideal for researchers and marine enthusiasts.

Detailed Description:

Fish Identification automates the task of classifying fish species using machine learning. By training on an extensive dataset, the system achieves high accuracy, making it a valuable tool for ecological studies and conservation efforts.

- **Key Features:**
 - Automated identification of fish species from images.
 - Real-time processing for on-field usage.
 - Comprehensive dataset with diverse aquatic species.

Technologies & Tools Used:

- **AI Framework:** TensorFlow, Keras
 - **Image Processing:** OpenCV
 - **Backend:** Flask
-

4. AI-Solid-Waste-Detection

Short Summary:

An intelligent system for detecting and classifying solid waste types using object detection models.

Detailed Description:

This project uses advanced AI techniques to identify waste types such as plastic, organic, and

metal in real time. Designed for use in smart cities and industries, it integrates with drone systems for large-scale monitoring and promotes efficient waste management.

- **Key Features:**

- Waste classification using YOLO.
- Integration with IoT and drones.
- Scalable for urban and industrial applications.

Technologies & Tools Used:

- **AI Framework:** YOLOv8
 - **Backend:** FastAPI
 - **Image Processing:** OpenCV
-

5. Brain Tumors Segmentation & Classification

Short Summary:

A medical imaging solution for detecting and classifying brain tumors from MRI scans.

Detailed Description:

This project provides an automated system for analyzing MRI scans, segmenting tumor regions, and classifying them into grades. It aids in accurate diagnosis and treatment planning, significantly reducing radiologists' workload.

- **Key Features:**

- Segmentation using U-Net models.
- Classification of tumor grades.
- Integration with hospital imaging systems.

Technologies & Tools Used:

- **AI Framework:** PyTorch, TensorFlow
 - **Medical Imaging Tools:** SimpleITK
-

6. Bringing Old Photos Back to Life

Short Summary:

A restoration tool that enhances and colorizes old photos using AI-based techniques.

Detailed Description:

This project restores damaged or aged photos by removing scratches, enhancing resolution,

and adding color to black-and-white images. The system employs GANs for professional-quality results.

- **Key Features:**

- Automated photo enhancement.
- AI-based colorization.
- High-resolution output.

Technologies & Tools Used:

- **AI Framework:** GANs
 - **Image Processing:** OpenCV
 - **Backend:** Flask
-

7. Patient Fall Prevention

Short Summary:

An AI-powered monitoring system that prevents patient falls in hospitals and elderly care facilities.

Detailed Description:

By integrating AI with IoT devices, this project monitors patient activity in real time, predicts fall risks, and alerts caregivers. It is designed to enhance safety in medical and home-care environments.

- **Key Features:**

- Fall prediction through video and sensor data.
- Real-time monitoring and alerts.
- Integration with IoT devices.

Technologies & Tools Used:

- **AI Framework:** TensorFlow
 - **IoT Devices:** Raspberry Pi
 - **Backend:** FastAPI
-

8. Pattern Recognition for Clothes

Short Summary:

A computer vision system to identify patterns and textures in clothing items, aiding in retail and e-commerce.

Detailed Description:

This project simplifies inventory management and visual searches for clothing retailers by recognizing and categorizing patterns. It enhances customer experience in online shopping platforms.

- **Key Features:**
 - Pattern and texture recognition.
 - Real-time categorization for retail.

Technologies & Tools Used:

- **AI Framework:** TensorFlow, Keras
 - **Image Processing:** OpenCV
-

9. DocAI STT

Short Summary:

A speech-to-text system designed for document transcription and voice-to-text processing.

Detailed Description:

DocAI STT converts voice input into text with high accuracy. It supports multiple languages and integrates seamlessly with document management systems for professional use.

- **Key Features:**
 - Multilingual support.
 - High-accuracy transcription.
 - Real-time processing.

Technologies & Tools Used:

- **AI Framework:** Google Speech-to-Text API
-

10. Graph-RAG Hospital Chatbot

Short Summary:

An intelligent chatbot tailored for hospitals to automate patient interactions.

Detailed Description:

This chatbot leverages GraphQL for efficient data access, helping patients schedule appointments, resolve queries, and access their medical records.

- **Key Features:**
 - Multimodal query handling.

- Integration with hospital databases.

Technologies & Tools Used:

- **AI Framework:** LangChain
 - **Backend:** FastAPI
-

11. OCR Receipts Extraction

Short Summary:

A data extraction tool that processes receipts into structured formats using OCR.

Detailed Description:

This project automates bookkeeping by extracting information from receipts and exporting it in formats like CSV, reducing manual errors.

- **Key Features:**
 - Multi-language OCR.
 - Export in structured formats.

Technologies & Tools Used:

- **OCR Tool:** Tesseract
-

12. Fast-RAG LLM LangChain

Short Summary:

An optimized Retrieval-Augmented Generation (RAG) system for efficient data querying with large language models.

Detailed Description:

This system combines RAG techniques with LangChain to enhance large language models by providing real-time data retrieval capabilities for dynamic applications.

- **Key Features:**
 - Optimized RAG pipelines.
 - Scalable architecture.

Technologies & Tools Used:

- **AI Framework:** LangChain
- **Backend:** FastAPI

13. Heat Microservice

Short Summary:

A microservice for managing heat data in IoT applications.

Detailed Description:

Heat Microservice offers a RESTful API for accessing and managing heat data, enabling real-time monitoring in IoT ecosystems.

- **Key Features:**
 - Scalable data management.
 - Integration with IoT devices.

Technologies & Tools Used:

- **Backend:** Flask
-

14. ChatLink

Short Summary:

A chat platform designed for seamless communication and link sharing.

Detailed Description:

ChatLink enhances collaboration by enabling users to bookmark and share links within their conversations, ensuring organized communication.

- **Key Features:**
 - Link bookmarking.
 - Secure messaging.

Technologies & Tools Used:

- **Frontend:** React.js
-

15. DappChat

Short Summary:

A decentralized chat application built on blockchain technology.

Detailed Description:

DappChat ensures secure communication by decentralizing message storage and authentication, providing users with a peer-to-peer messaging experience.

- **Key Features:**

- Blockchain-based authentication.
- Decentralized message storage.

Technologies & Tools Used:

- **Blockchain Framework:** Ethereum
- **Frontend:** React.js

Each project reflects a focus on solving real-world problems using cutting-edge technology, optimized for scalability and user experience.

NOTE: All the projects are also listed in my GitHub repository, but only a few are mentioned here for review. You can see more relevant short and long-term projects in my profile.

[GitHub Profile] <https://github.com/javaidqbal11?tab=repositories>