20
GEN AI PROJECTS
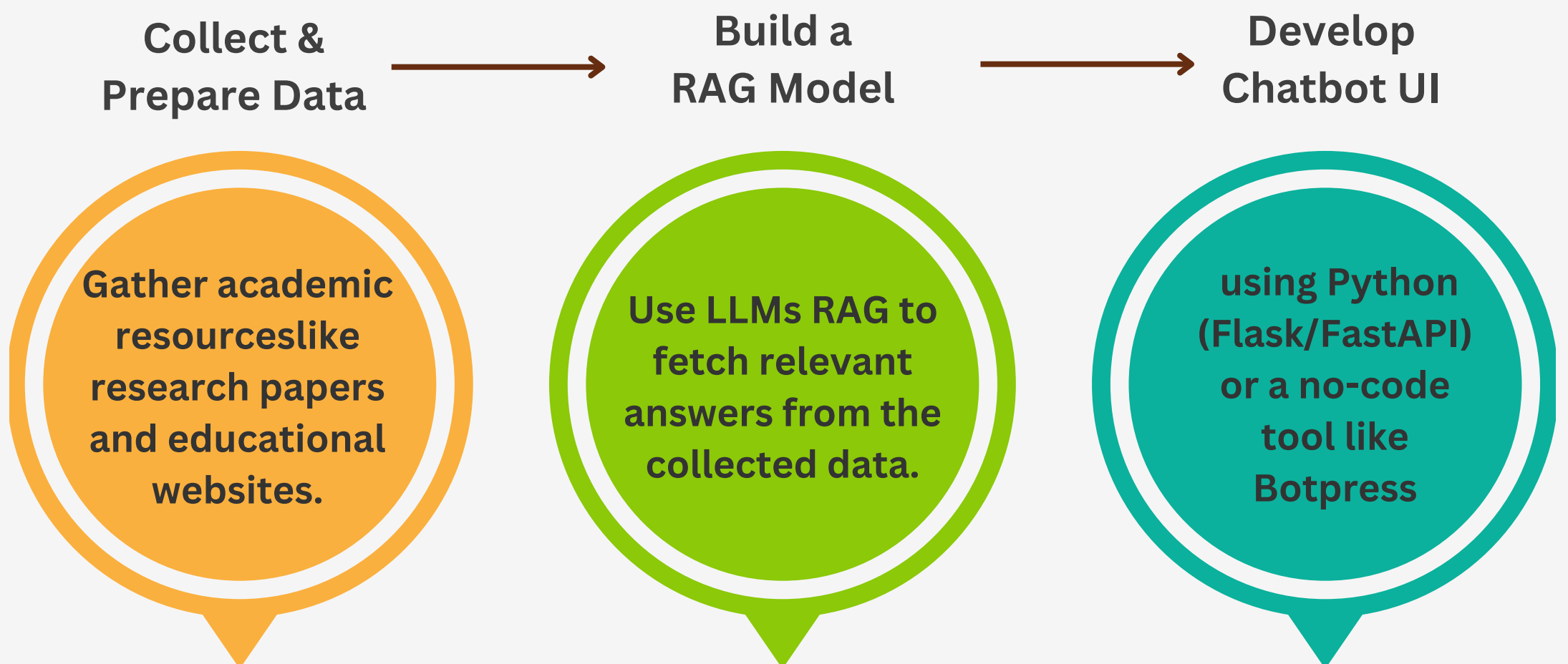
Build these and get hired

→

1 Student Assistance Chatbot

Problem Statement

Technical students struggle with real-time academic support due to the lack of AI-driven personalized learning, query resolution, and resource recommendations.

Solution

An Agentic RAG chatbot provides AI-driven academic support by retrieving study materials, answering queries, and offering personalized study plans using LLMs for accurate, adaptive assistance.

Collect & Prepare Data → **Build a RAG Model** → **Develop Chatbot UI**

Gather academic resourceslike research papers and educational websites.

Use LLMs RAG to fetch relevant answers from the collected data.

using Python (Flask/FastAPI) or a no-code tool like Botpress

Impact

24/7 Academic Support : Instant query resolution for technical subjects.

Personalized Learning : AI-driven recommendations based on student progress.

Women Safety Analytics

Problem Statement

Women face safety threats in public and private spaces, with limited real-time risk assessment and preventive measures. Existing systems lack proactive analytics to detect and mitigate potential dangers effectively

Solution

The app uses LLMs to assess risks, send alerts, and provide safety insights. It analyzes text and voice inputs to detect threats and offers real-time recommendations. Data sources include crime reports and public safety databases.

Threat Detection (LLMs & Vision AI)
Analyzes text, voice, and images to identify risks.

Real-Time Alerts
Sends instant safety warnings and emergency alerts.

AI Safety Tips
Uses GPS tracking and NLP models to analyze surroundings.
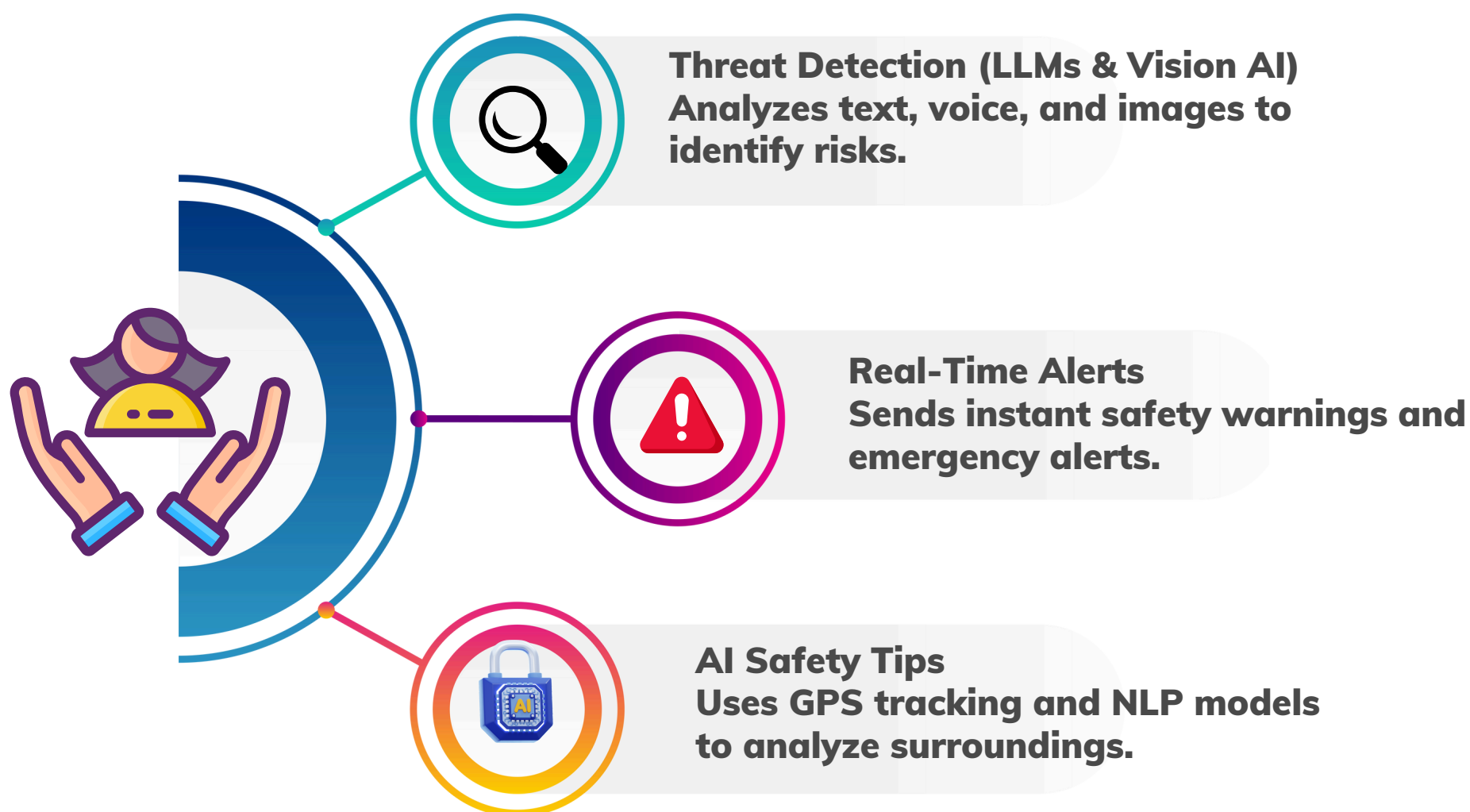
Impact

Proactive Safety Measures : AI-driven analysis helps prevent safety threats before they occur

Real-Time Assistance : Users get instant guidance and emergency support.

Real-Time Threat Detection

Problem Statement

Traditional detection methods struggle to classify moving targets like humans, vehicles, and drones. AI-powered Micro-Doppler classification uses radar signals to analyze motion patterns for accurate identification.

Solution

The solution uses Multi-Modal RAG to combine text, radar, and visual data for accurate target classification in defense. It integrates micro-Doppler radar with sensor inputs for real-time decisions. Data sources include open radar datasets and research papers.
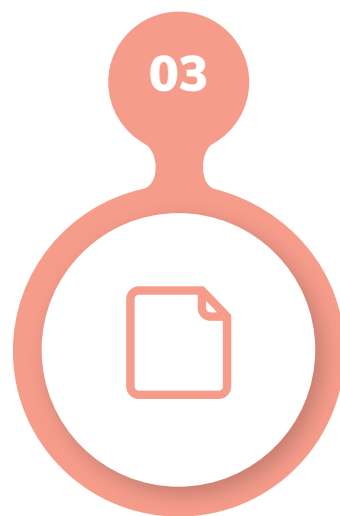
Access radar datasets

Train AI Models

Flask to display classification insights

01

02

03

04

05
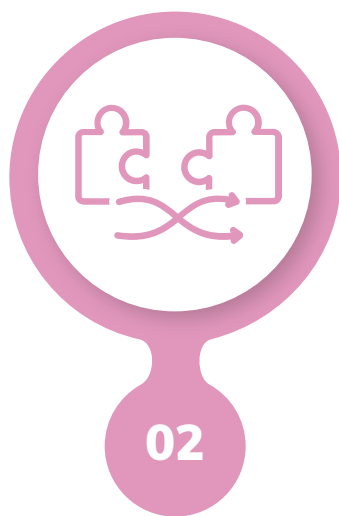
text, radar, and visual Integrate Multi-Modal RAG

Develop a Smart Classifier

Impact

Accurate & Real-Time Classification : Fuses radar and visual data for precise target identification, deployable on drones and surveillance systems.

Adaptive & Reliable System : Reduces false positives and dynamically updates threat signatures for improved security.
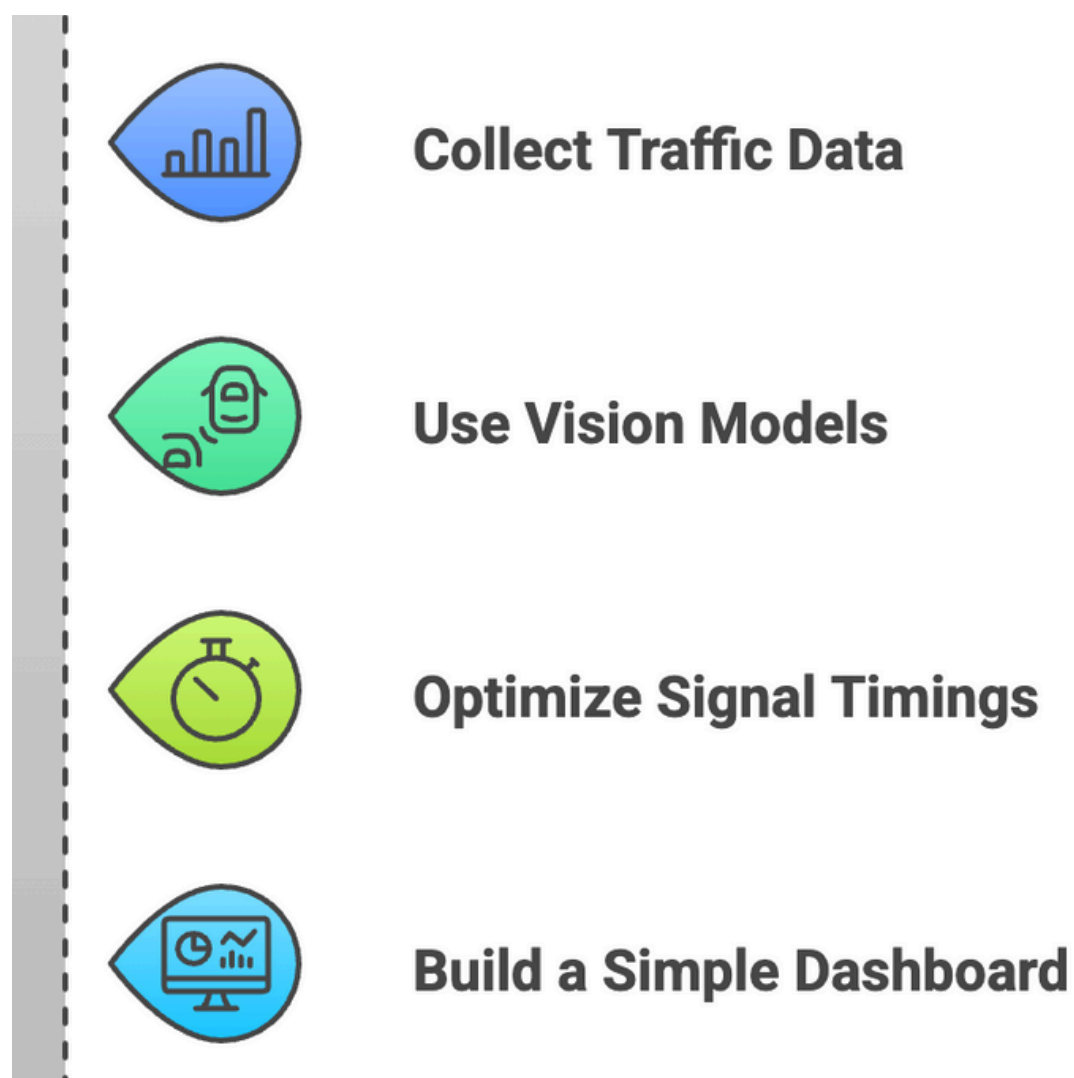
Smart Traffic Management System

Problem Statement

Traditional systems lack real-time visual analysis with contextual understanding. MM RAG integrates image recognition and conversational AI to provide accurate insights and responses.

Solution

The system uses Vision Models to analyze traffic and adjust signals in real time, reducing congestion. AI detects vehicles, pedestrians, and emergencies for better coordination. Data sources include Kaggle and government traffic databases

- Collect Traffic Data
- Use Vision Models
- Optimize Signal Timings
- Build a Simple Dashboard

Impact

Reduced Traffic Congestion : AI-driven adaptive signals improve vehicle flow and reduce wait times.

Emergency Vehicle Priority: Automatically adjusts signals for ambulances and law enforcement.
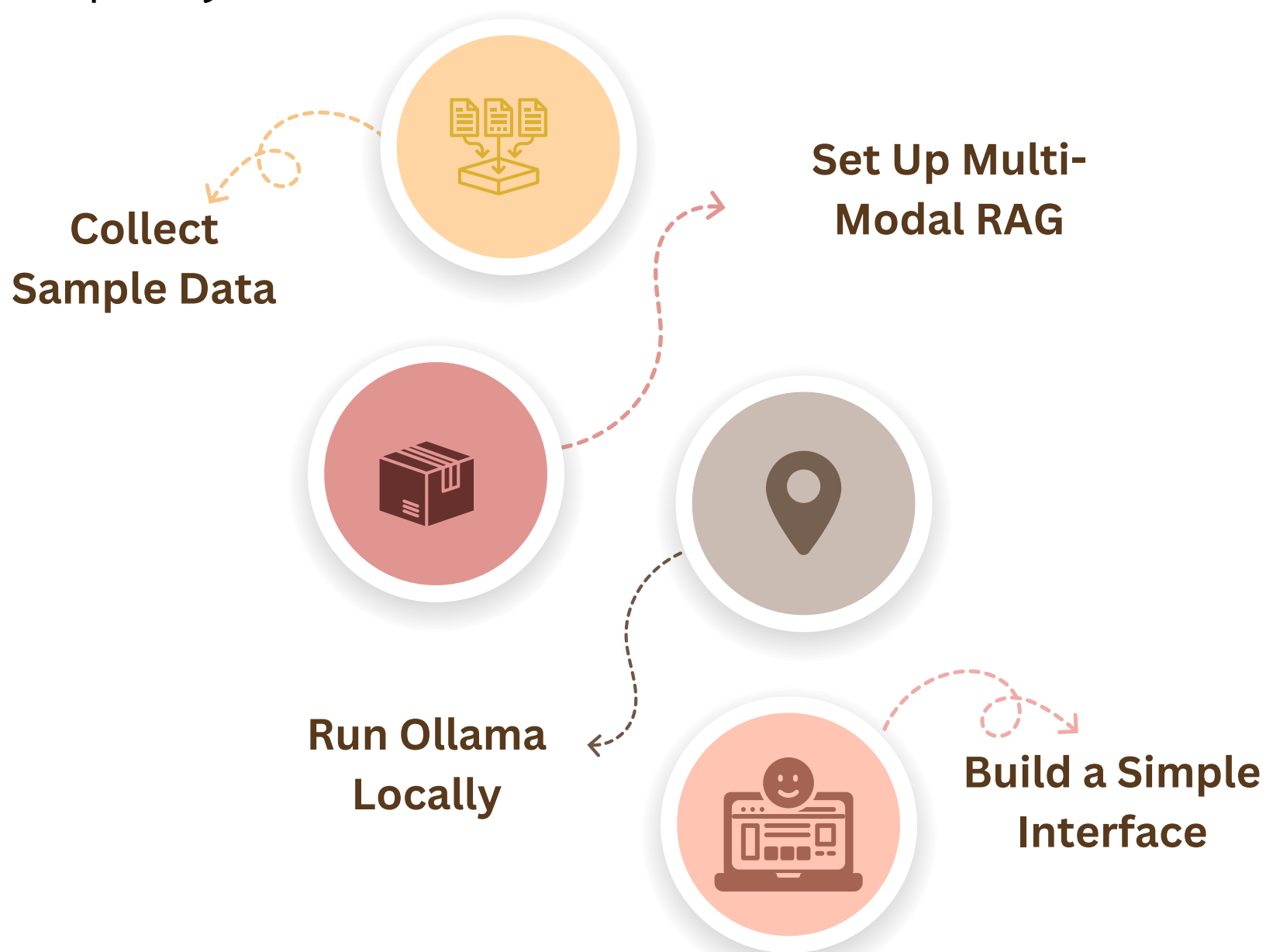
Operational Management System

Problem Statement

Design and develop an AI-powered operational management system to optimize resource utilization, enhance situational awareness and improve decision-making processes.

Solution

Leverage Multi-Modal RAG to process real-time video, audio, and sensor data, enhancing situational awareness. Run Ollama locally for real-time decision-making, ensuring low latency and data privacy.

Collect Sample Data

Set Up Multi-Modal RAG

Run Ollama Locally

Build a Simple Interface

Impact

Smarter resource management: through real-time AI-driven decision-making.

Faster and more efficient operations: with automated situational awareness.
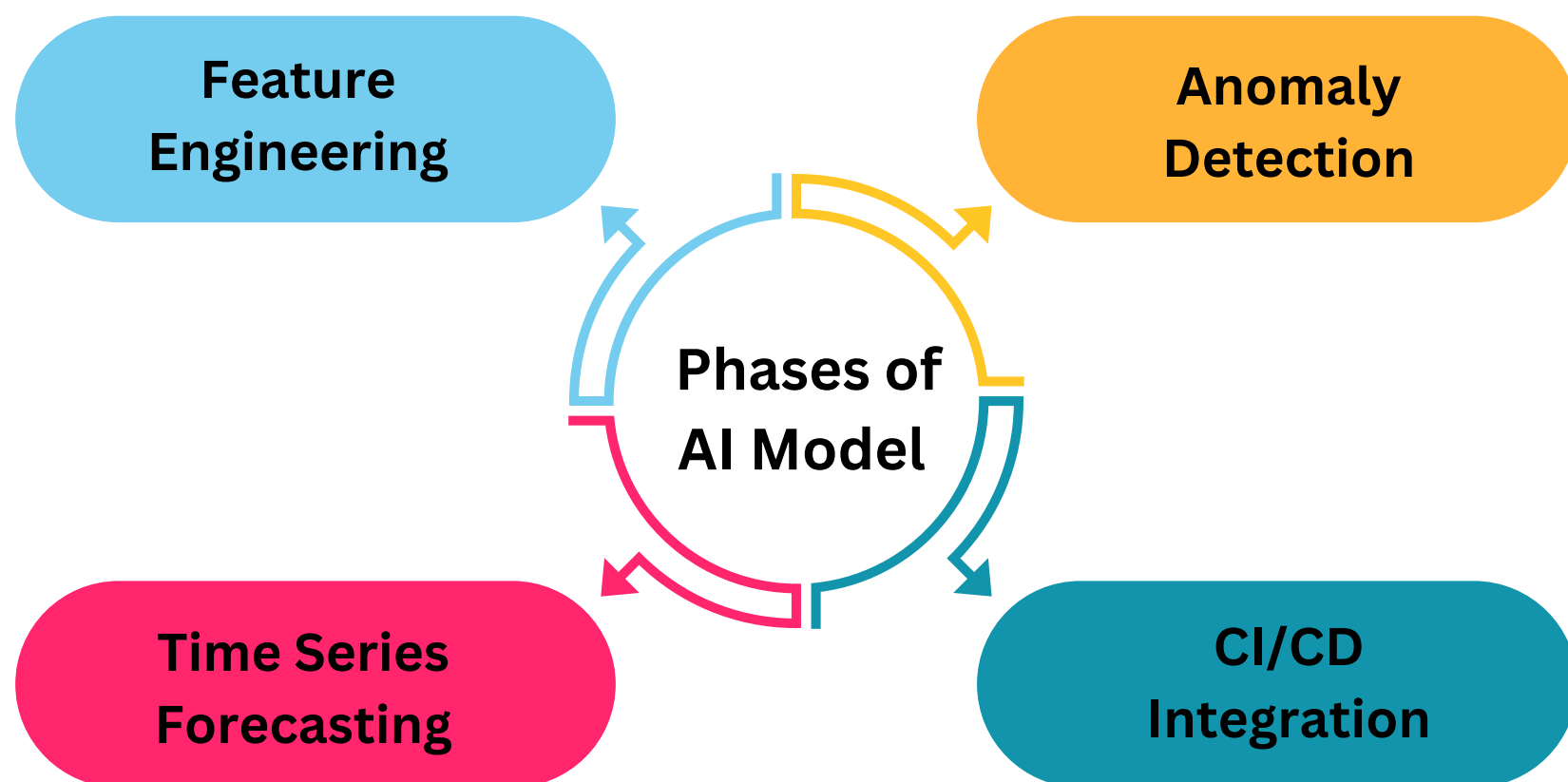
6 AI-Based Electricity Demand Forecasting

Energy

Problem Statement

Accurate electricity demand forecasting prevents power shortages and optimizes energy distribution. Existing methods fail to handle real-time fluctuations .

Solution

An AI-powered system will forecast electricity demand using past consumption, weather data, and grid trends. CI/CD pipelines ensure continuous updates for accurate predictions. Data sources include energy usage, weather reports, and grid data.

Feature Engineering

Anomaly Detection

Phases of AI Model

Time Series Forecasting

CI/CD Integration

Impact

Improved Grid Stability : Prevents blackouts by accurately predicting demand spikes.

Optimized Energy Distribution : Helps power companies allocate resources efficiently.

Bhavishya Pandit
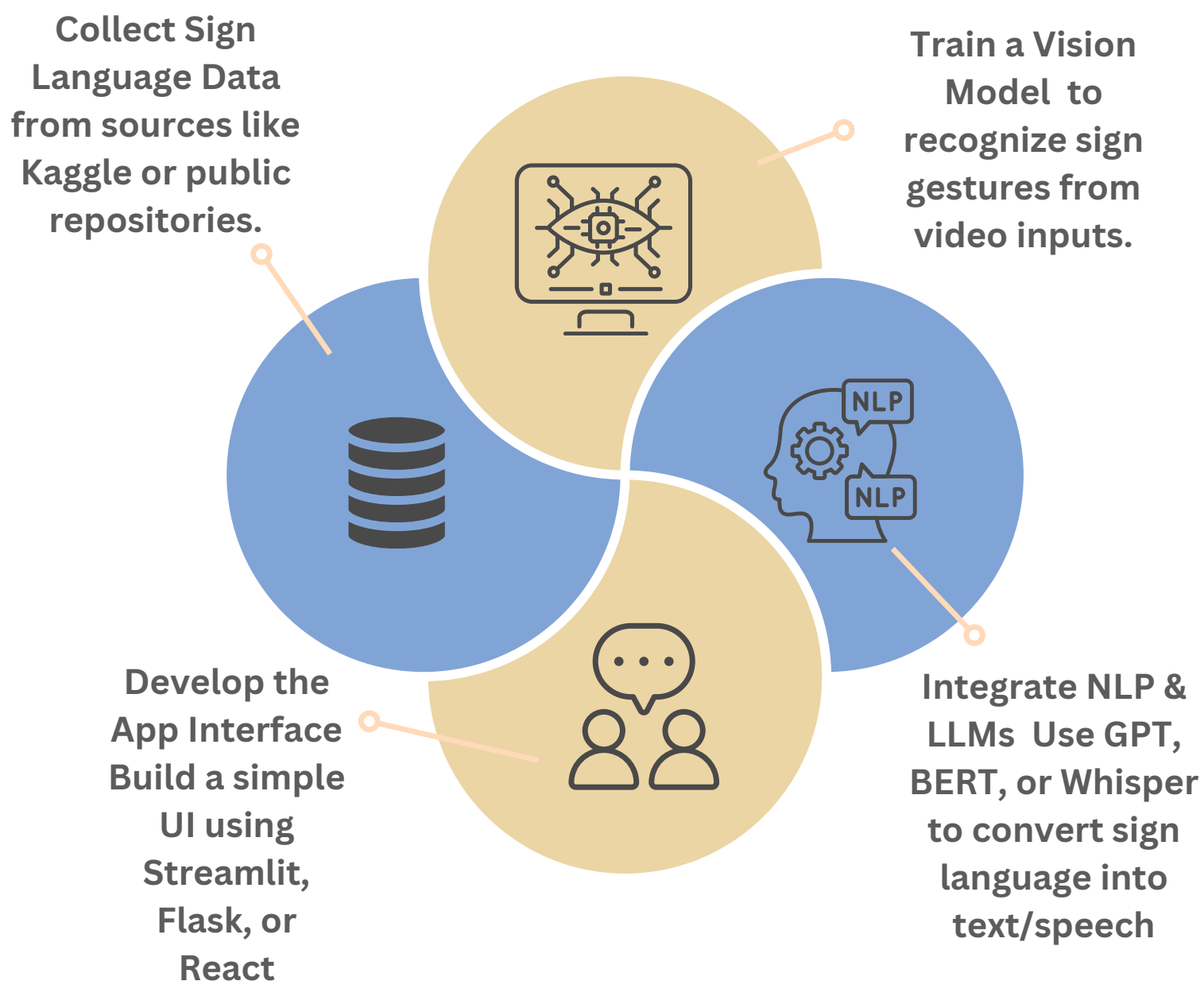
Learning App for the Deaf and Mute

Problem Statement

Deaf and mute individuals face communication barriers due to the lack of seamless sign language translation. Existing solutions are limited in real-time conversion, making difficult.

Solution

A Multi-Modal RAG model helps in learning sign language by converting gestures into text or speech and vice versa. It uses AI to recognize signs and LLMs for real-time translation. Data sources include sign language datasets and linguistic research papers.

Collect Sign Language Data from sources like Kaggle or public repositories.

Train a Vision Model to recognize sign gestures from video inputs.

Develop the App Interface Build a simple UI using Streamlit, Flask, or React

Integrate NLP & LLMs Use GPT, BERT, or Whisper to convert sign language into text/speech

Impact

Bridges Communication Gaps: Enables real-time sign-to-text and text-to-sign translation.

Enhanced Learning with AI: Provides a personalized and interactive experience

Crop Disease Prediction and Management System

Problem Statement

Crop diseases reduce yield, and traditional detection is slow and inaccurate. Farmers need real-time AI tools for diagnosis and management.

Solution

Using Vision-Based AI Models, the system analyzes plant images for early disease detection and integrates real-time data (humidity, temperature) for accuracy. It classifies diseases, suggests treatments, and offers preventive measures via a farmer-friendly mobile/web app.

Collect & Prepare Data

Develop a Web/App Interface

Train a Vision Model

Deploy & Improve
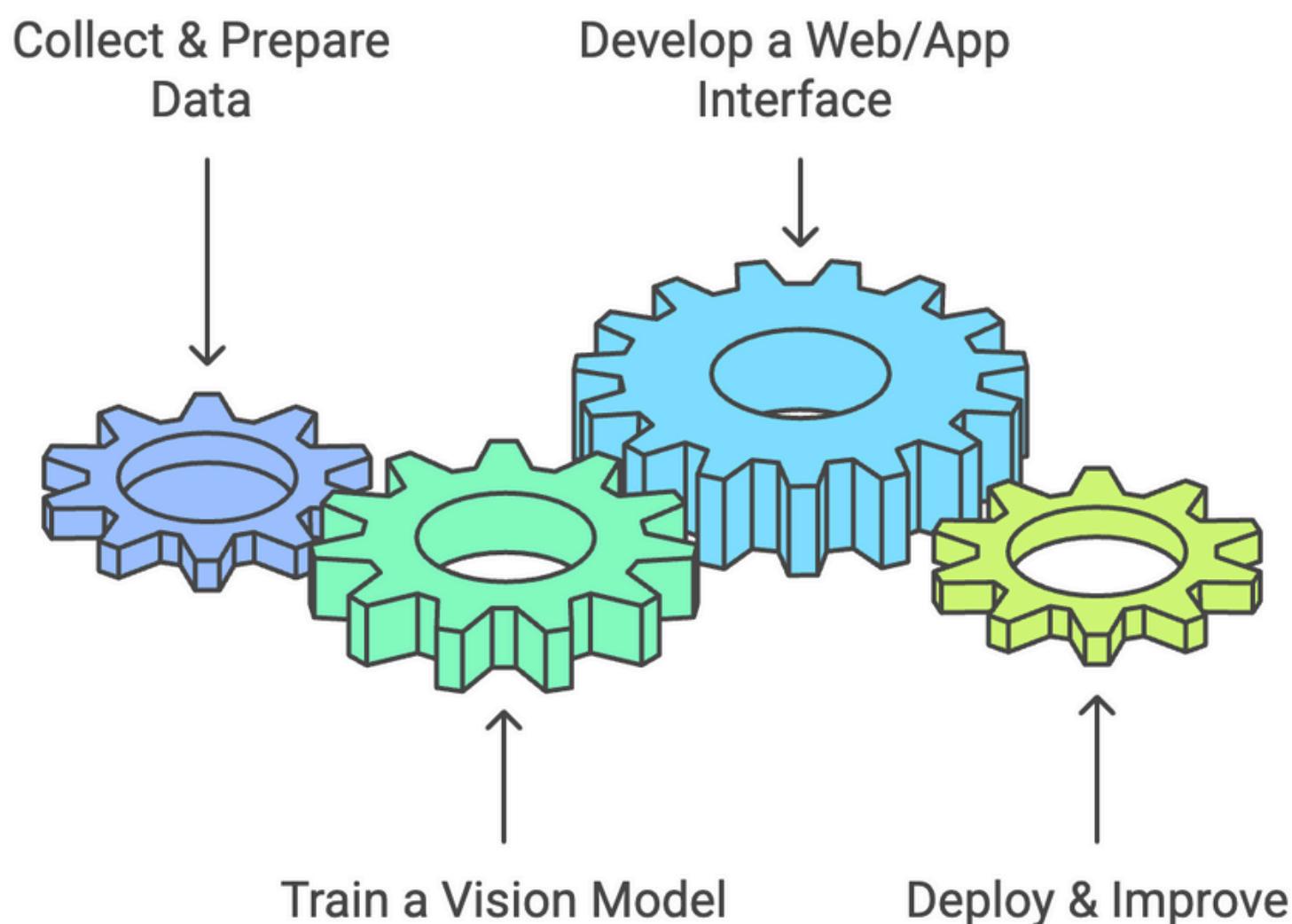
Impact

Early Disease Detection: Prevents crop loss by identifying diseases before they spread

Automated Diagnosis : Reduces reliance on manual inspections with AI-driven insights.
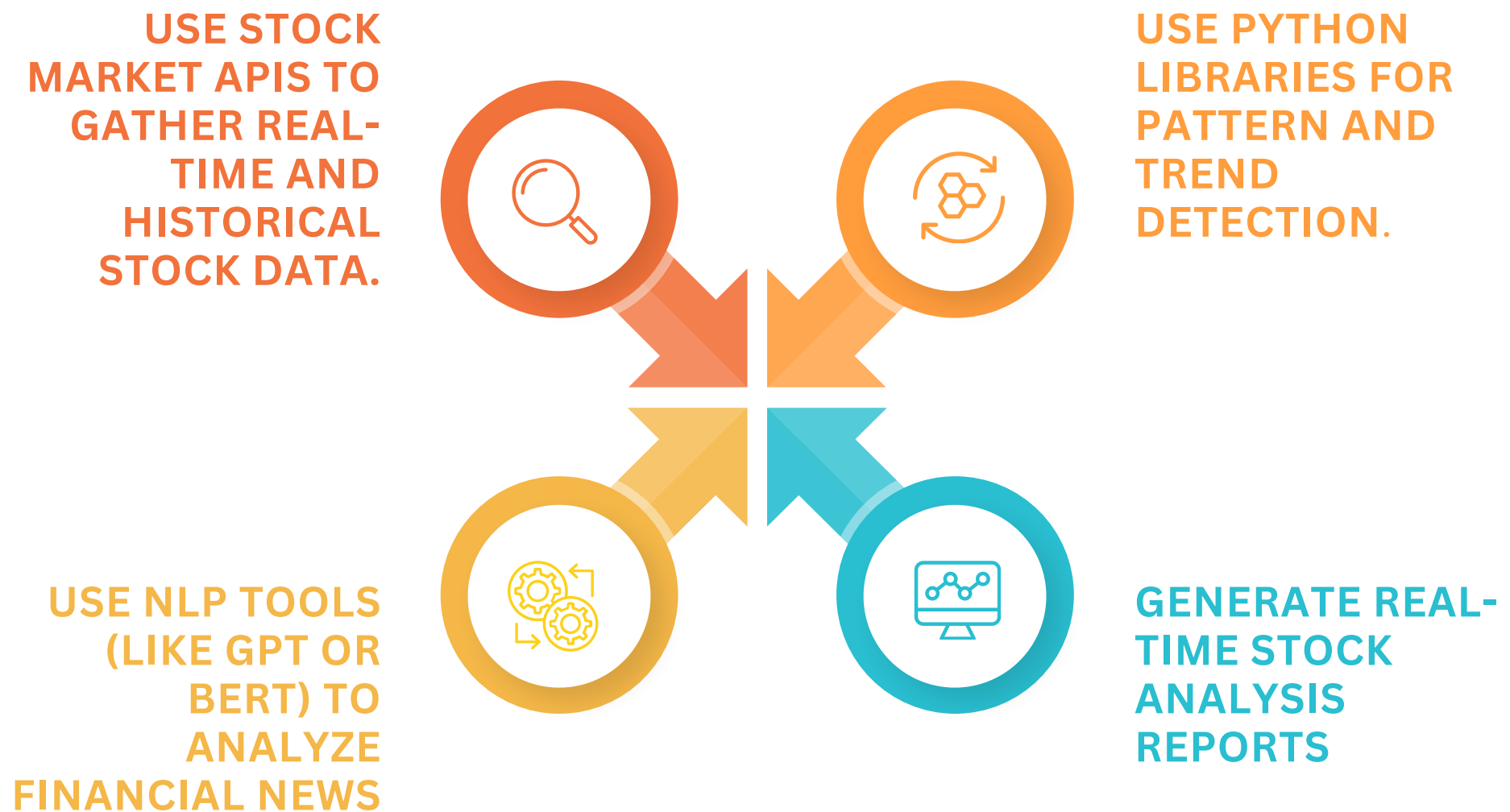
HR Optimization with Multi-Agent System

Problem Statement

HR teams face inefficiencies in resume screening and candidate matching. An LLM-powered system automates these tasks, ensuring faster and more accurate hiring decisions.

Solution

The LLM-powered HR system automates resume screening, candidate matching, and decision-making. It analyzes job descriptions, ranks CVs, and generates interview questions for efficient hiring. Data sources include job listings, resumes, and HR databases.

USE STOCK MARKET APIS TO GATHER REAL-TIME AND HISTORICAL STOCK DATA.

USE PYTHON LIBRARIES FOR PATTERN AND TREND DETECTION.

USE NLP TOOLS (LIKE GPT OR BERT) TO ANALYZE FINANCIAL NEWS

GENERATE REAL-TIME STOCK ANALYSIS REPORTS

Impact

Reduces Manual Effort : Automates repetitive HR tasks, saving time.

Enhances Decision-Making : Provides data-driven insights for HR managers.

Patient Data Analysis System

Problem Statement

Healthcare providers struggle to analyze patient data effectively, limiting insights into health trends.

Solution

A Multi-Modal RAG system analyzes medical records and lab data to identify health patterns. It offers real-time risk assessment, trend analysis, and personalized health recommendations using research papers and health databases.

Data Collection	Data Preprocessing	Model Selection	Integration & Analysis	Visualization & Recommendations
Gathering public datasets from sources like Kaggle and UCI	Cleaning and structuring data using NLP and Pandas	Analyzing text with pre-trained LLMs and multimodal models	Implementing RAG to merge insights from different data modalities	Creating dashboards for risk assessments and personalized recommendations

Impact

Improved Diagnosis & Risk Assessment : Early identification of health risks.

Personalized Patient Care : Tailored health insights based on demographics.

11 Stock Market Analysis System

Problem Statement

Investors find it hard to analyze stock prices, trading volume, and market trends. An AI system automates data analysis and visualization for better insights.

Solution

The system uses AI agents to analyze stock data, track trends, and provide insights. It gathers real-time and historical data, evaluates market patterns, and generates dashboards for better decisions. Data sources include stock market APIs and financial news.

Collect Stock Data
Gather real-time and historical stock data using APIs

Extract Sentiment from News
Analyze financial news with NLP tools to understand sentiment

Automate Reports
Generate real-time stock analysis reports using Python

Analyze Market Trends
Detect patterns in stock prices and trading volume using python library

Build a Dashboard
Create a dashboard to visualize trends and insights

Impact

Better Investment Decisions : AI-driven insights help investors maximize returns.

Automated Analysis & Reporting : Reduces manual effort and improves decision accuracy.

Learning Path Dashboard

Problem Statement

People find it hard to follow a clear learning path, slowing skill growth. A smart dashboard personalizes learning, suggests resources, and tracks progress for better skill development.

Solution

The system uses different AI agents to enhance skill development. It tracks progress, understands user preferences, and suggests the best learning content. It updates learning paths in real time for better results. Users can access videos, articles, and courses from Coursera, Udemy, and Google Scholar for structured learning.

Gather Data

AI Tools

Application Development

User Interaction

System Refinement
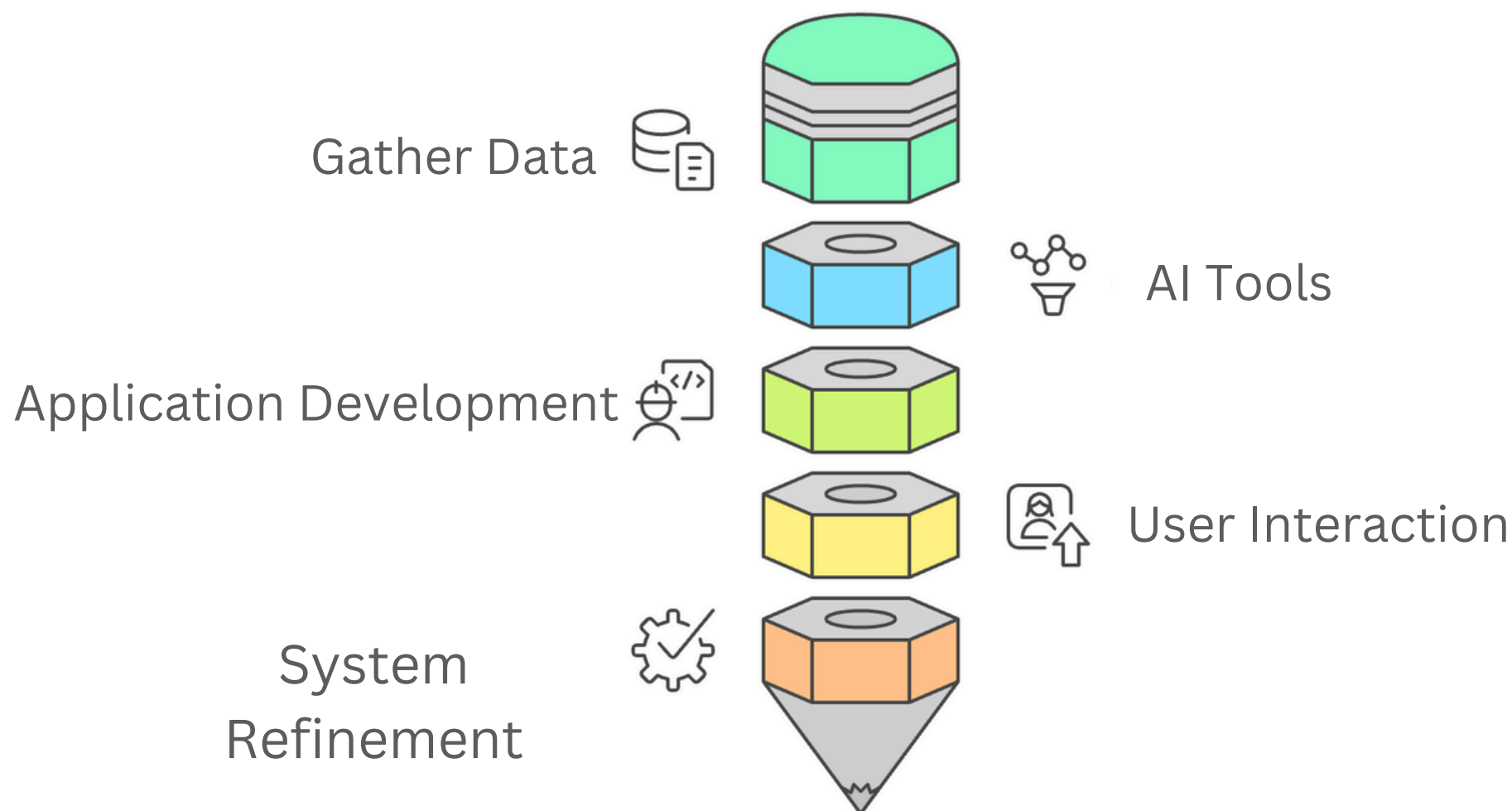
Impact

Personalized & Adaptive Learning : recommendations and real-time progress tracking optimize skill development.

Seamless Integration & Analytics : Interactive dashboards and LMS connectivity enhance structured learning and accessibility.

AI Agent for Customer Behavior Analysis

Problem Statement

Businesses struggle to analyze customer purchases and forecasting opportunities. AI uncovers checking patterns, preferences, and trends for better decisions.

Solution

The system employs multiple AI agents to analyze customer purchase behavior, uncover spending patterns, and provide actionable insights. By using multi-agent collaboration, the platform ensures efficient data collection, analysis, and personalization.Download purchase data from Kaggle or open sources.

1 USE MULTI-AGENT

2 APPLY NLP & ML

3 VISUALIZE INSIGHTSI N DASHBOARD

Impact

Optimized Inventory Management : Reduces overstocking and stockouts.

Improved Revenue Generation : Identifies high-value customer segments and upsell opportunities.

Research & Innovation Monitoring System

Problem Statement

Institutions struggle to track research, patents, and start-ups. AI helps analyze and report data for better decisions.

Solution

Build an AI-powered system to track research, patents, innovations, and startups using AI agents. The system gathers research papers, analyzes trends, and tracks startup investments using Python, NLP models, and public databases for real-time insights.Collect data from research papers, patents, and startup investment from public sources.

Develop AI Models

1

Develop NLP models to extract insights, identify trends, and categorize research and funding data.

Integrate AI Agents

2

Build AI agents (Research Tracker, Analytics, and Funding Agent) using Python and APIs to automate data processing.

Create a Dashboard

3

Create a web dashboard to display real-time analytics and trends.

Impact

Optimized Research & Management : Automates tracking, ensuring better oversight.

Enhanced IPR Protection : Streamlines patent and copyright processes.

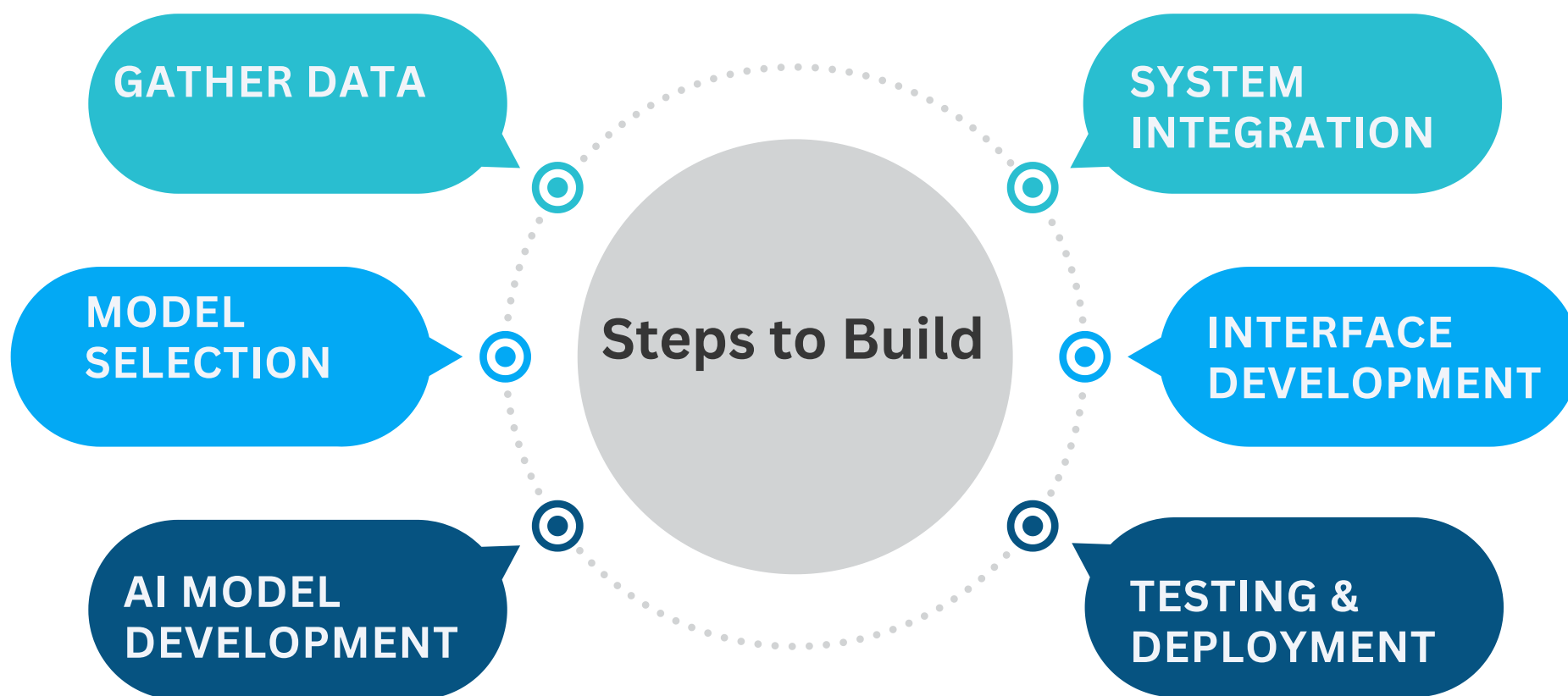# Chatbot with Image Recognition

Problem Statement

Existing systems struggle to analyze images with contextual understanding in real time. Traditional models can identify objects but fail to provide meaningful insights by linking visuals with text.

Solution

The solution is to use Multi-Modal RAG to combine image recognition with conversational AI. This system analyzes images and understands their context in real time, providing meaningful insights by linking visuals with text.The dataset includes images, real-time feeds, online knowledge bases, and user inputs.

GATHER DATA

SYSTEM INTEGRATION

MODEL SELECTION

Steps to Build

INTERFACE DEVELOPMENT

AI MODEL DEVELOPMENT

TESTING & DEPLOYMENT

Impact

Accurate Insights : Provides context-aware analysis for healthcare, e-commerce, and education.

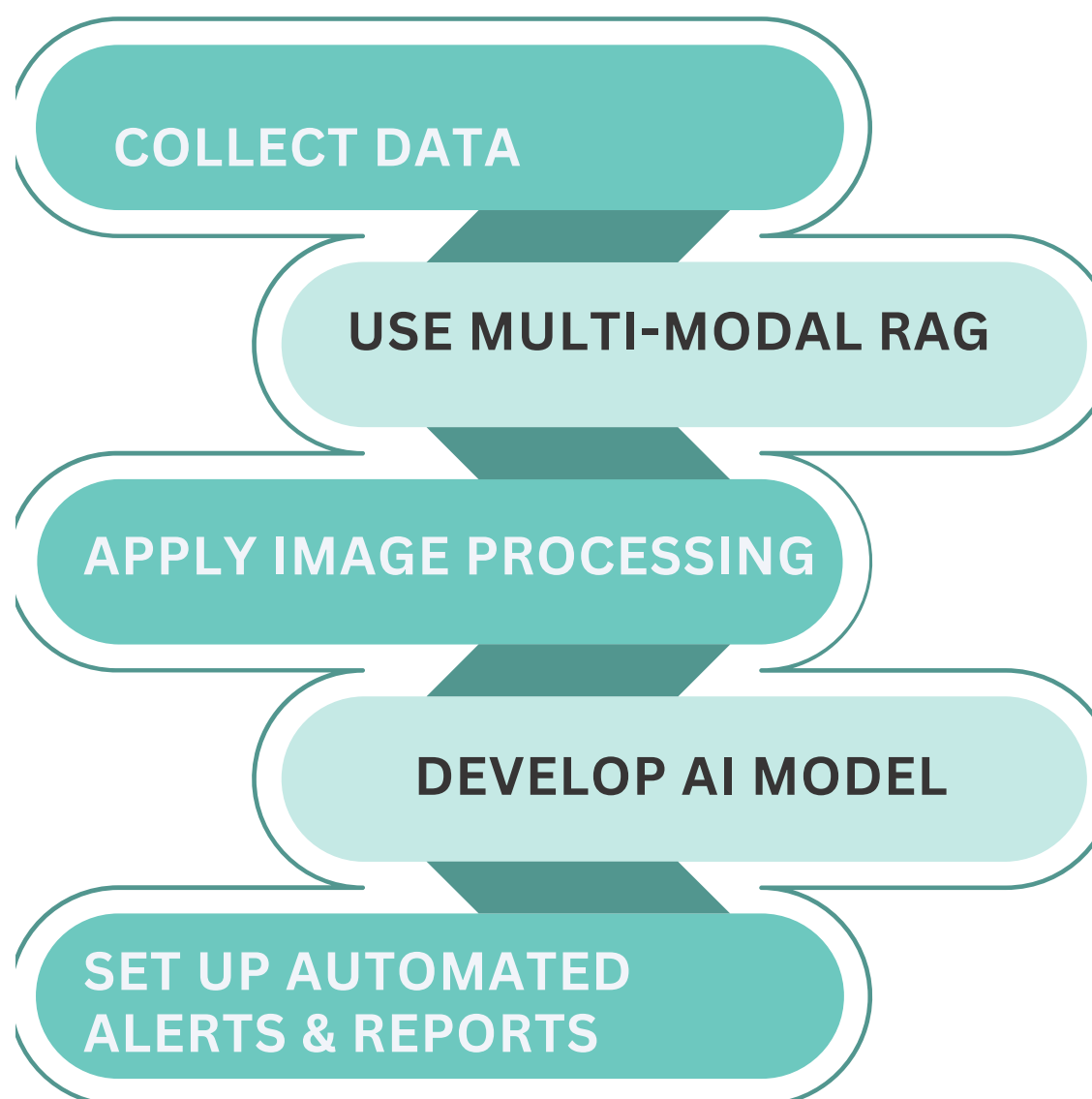**Seamless Interaction :** Connects text and images for better AI-driven conversations

System for Orchard Management

Problem Statement

Apple farmers struggle to monitor crop health, detect pests, and estimate yields, causing inefficiencies. A drone-based AI system helps by providing real-time monitoring, analysis, and smarter farm management.

Solution

The system uses Multi-Modal RAG to analyze drone images and sensor data, detecting plant health issues and providing farming insights. It helps with disease detection, yield prediction, and better irrigation. Data sources include Kaggle, NASA, and agricultural research databases.

COLLECT DATA

USE MULTI-MODAL RAG

APPLY IMAGE PROCESSING

DEVELOP AI MODEL

SET UP AUTOMATED
ALERTS & REPORTS

Impact

Sustainable Farming : Reduces chemical overuse, promoting eco-friendly agriculture.

Improved Crop Health Monitoring : Early detection of diseases and pests prevents yield loss.

Bhavishya Pandit

Bus Scheduling and Route Optimization System

Problem Statement

Public transport struggles with delays and inefficient routes. A smart system automates scheduling, tracks traffic, and optimizes bus routes for smoother travel.

Solution

The system uses AI agents to optimize bus schedules by analyzing real-time traffic, passenger demand, and weather data. It processes historical data and improve efficiency. This include ML and cloud platforms, with data from ECMWF, Kaggle, and government databases.

- GET TRAFFIC, WEATHER, AND BUS DATA FROM KAGGLE OR ECMWF.
- USE PYTHON WITH TENSORFLOW OR SCIKIT-LEARN TO PREDICT SCHEDULES.
- BUILD A SIMPLE DASHBOARD WITH STREAMLIT OR FLASK.
- TEST, REFINE, AND UPDATE THE MODEL FOR BETTER ACCURACY

Impact

Reduced Delays : Dynamic route adjustments minimize travel time.

**Improved Passenger Experience** : Minimizes wait times and overcrowding..

Career Guidance System

Problem Statement

People struggle to follow a structured learning path, slowing skill growth. An AI dashboard personalizes learning, recommends resources, and tracks progress for better development.

Solution

The system uses different agents to guide careers. One analyzes skills, another tracks job trends, and another suggests learning resources. A decision-making agent recommends career paths with real-time job openings, helping users make smart choices.Users can find legal datasets on Kaggle,

Gather Data

Create AI Agents

Steps to Build

Design a User Interface

Test and Improve
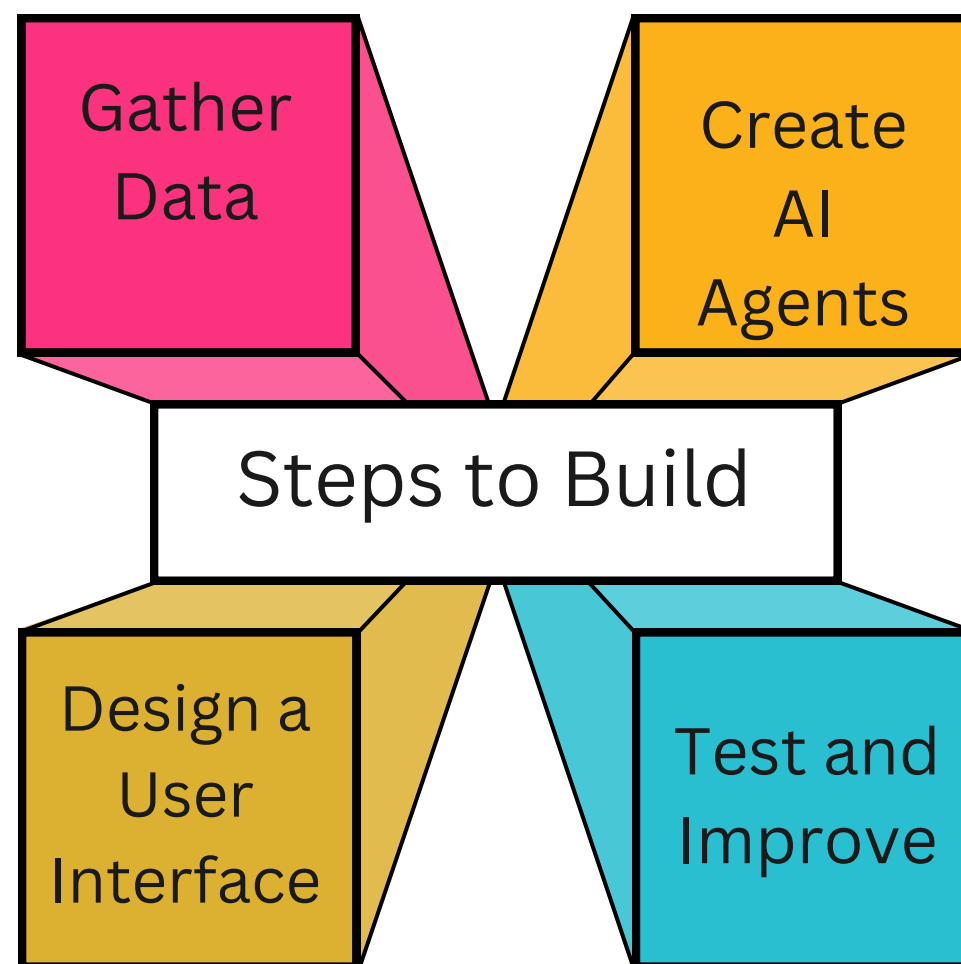
Impact

Smart Career Guidance : Recommends high-demand job roles for better career decisions.

Skill Enhancement & Employability : Uses adaptive learning and job market analysis to improve skills and job opportunities.

Legal Information System

Problem Statement

Finding case laws and judgments is hard due to scattered information. A system using different agents organizes them in one place for easy and quick access.

Solution

The system uses Agentic RAG to organize case laws, judgments, and legal references. It retrieves relevant cases, provides summaries, and allows natural language search for easy access. Users can find legal datasets on Kaggle, Hugging Face, or government portals.

Steps to Build

01 Download case law datasets from various sources

02 Use a RAG model to fetch relevant cases

03 Create a natural language search feature with LLM

04 Develop a web or chatbot interface using Python

Impact

Legal Research: Provides quick and accurate access to case laws and legal information.

**Supports better :** Legal decision-making with contextual case law retrieva**l.**

Face Recognition & Communication System

Problem Statement

Managing large crowds makes it difficult to locate missing people or items. Multi-Modal RAG helps by recognizing faces and alerting authorities in real time for quick recovery.

Solution

The Multi-Modal RAG system helps police find missing people and items by matching faces from CCTV and drones with a database. It integrates facial, text, and voice data for case insights and enables real-time police coordination for quick recovery.

Collect Sample Data

Build Recognition Model

Integrate Multi-Modal RAG

Create Simple Dashboard
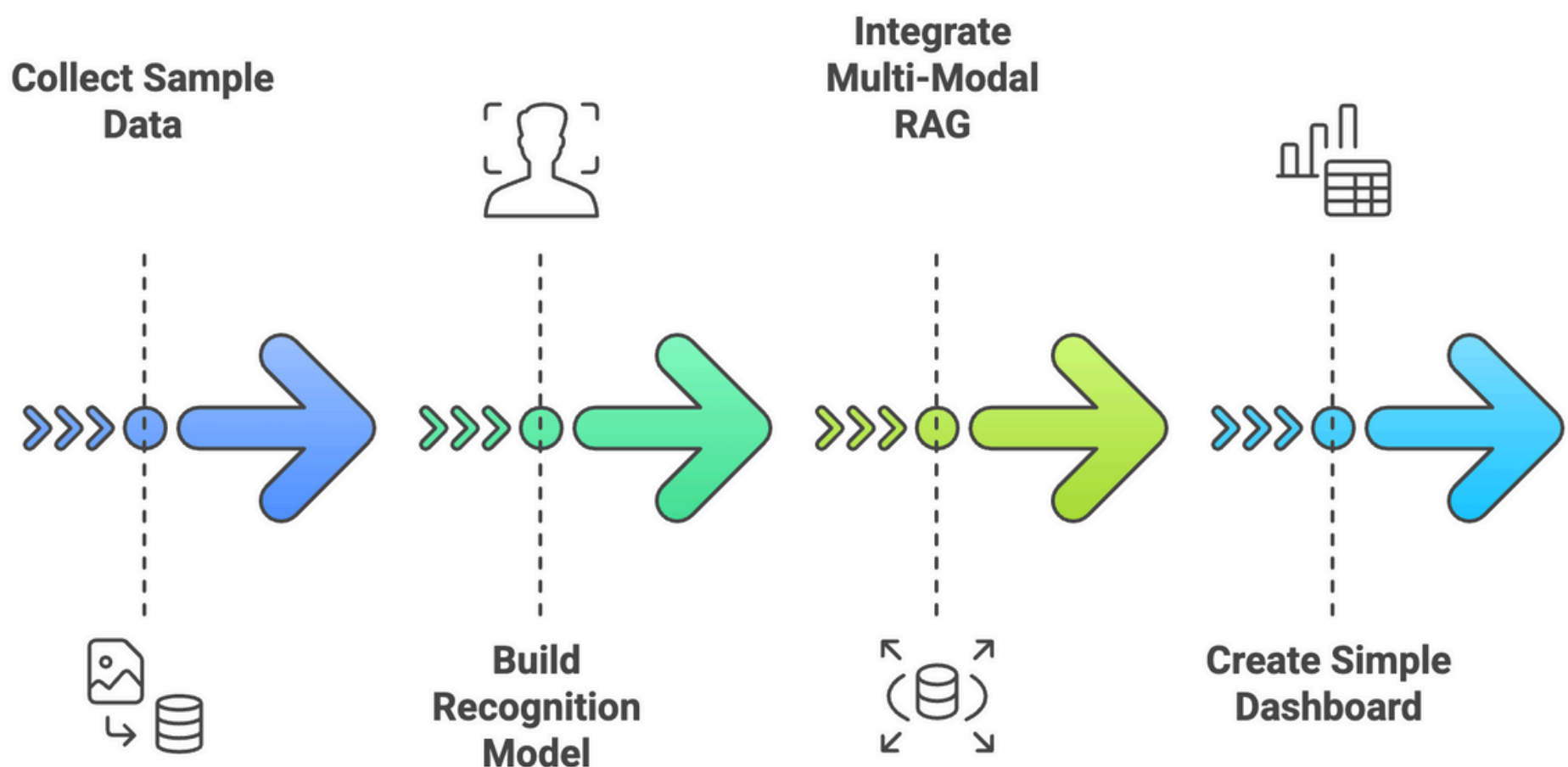
Impact

Improved Law Enforcement Coordination: Real-time alerts and communication streamline police operations.

Crowd Safety: Reduces response time, minimizing risks in high-density gatherings.

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