

PRESENTS

Agentic Al Day

Build the next generation of intelligent agents



Team Details

- Team name: Overfit Ops
- b. Team leader name: Susmit Banerjee
- c. Problem statement: Project Kisan



Brief about the idea

Project Kisan is a cutting-edge Agentic AI LLM application, leveraging the advanced capabilities of the Gemini API to transform modern agricultural practices.

This innovative platform empowers farmers with a suite of essential tools designed to enhance productivity and profitability.

Key features include an:

- intuitive crop disease identification and solution system
- enabling swift diagnosis and effective remedies through image analysis.
- Furthermore, the app provides comprehensive insights into various government schemes and benefits, offering personalized guidance to help farmers access relevant support.

Rounding out its robust offerings, the app delivers real-time market analytics of crop prices, drawing data from external APIs to equip farmers with crucial information for informed selling decisions. Except that the farmer can ask for information to combine with their own experience and take unique decisions. Also, the input and output functionalities include speech support including local languages.





Opportunities

- How different is it from any of the other existing ideas?
- **Crop Disease Identification & Solution**: While there are solutions that can identify the diseases, but high accurate resolution of the diseases are not provided
- Govt. Schemes Recommendations: There are govt. Portals which highlight the different schemes, however, it is not easy for the farmer to understand which scheme should be ideal for them. This agentic AI app solves the problem by providing personalized and comprehensive recommendations
- Real-Time Market Analytics of Crop Prices: Although there are apps which provide real-time crop prices, but they don't provide any real-time forecasting or recommendations as to what is the best time to sell the crop

How will it be able to solve the problem?

- Our agentic AI app empowers farmers with data-driven decisions, shielding them from exploitation by third-party vendors. By integrating with government-verified and reputable data sources via RAG method, our LLM delivers concise, accurate insights and recommendations, serving as the reliable, one-stop solution farmers need.

• <u>USP of the proposed solution</u>

- **Prevent ~USD 3.5B Losses to Farmers:** Some estimates suggest that Indian agriculture suffers annual losses ranging from INR 290 billion (approximately USD 3.5 billion) due to pests and diseases combined. One older study from 2014 by Assocham and Yes Bank put the annual loss due to pest and disease at INR 50,000 crore (approximately USD 6 billion) [Reference]
- **Empowering Farmers**: A NABCONS study (2022) estimated India suffers a food loss of about INR 1.53 trillion (USD 18.5 billion) annually due to post-harvest losses (PHL) of crops and agri-allied produce. A significant portion of these losses can be attributed to market inefficiencies and the inability to sell at the right time. This app will prevent any 3rd party to manipulate farmers and thus empowering farmers with more accurate profit margins. Also it will recommend personalized and beneficial govt. Schemes for farmers [Reference]



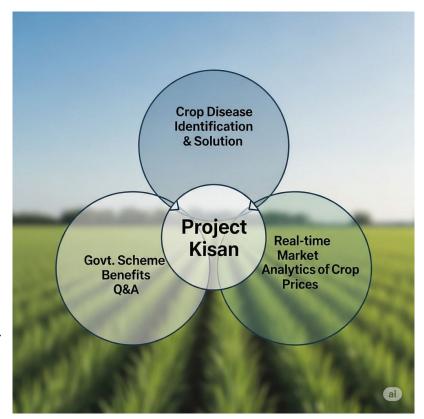


List of features offered by the solution

Features in the App:

- **Crop Disease Identification & Solution:** Snap a picture of your crop, and our app instantly identifies diseases and offers solutions, powered by a vast database and advanced Al.
- Govt. Scheme Benefits Q&A: Discover current government schemes tailored to your needs. Our intelligent agent can even suggest the best programs based on the farmer's specific requirements.
- Real-time Market Analytics of Crop Prices: Get live updates on crop prices and smart recommendations on the best time to sell, thanks to our powerful forecasting agent.

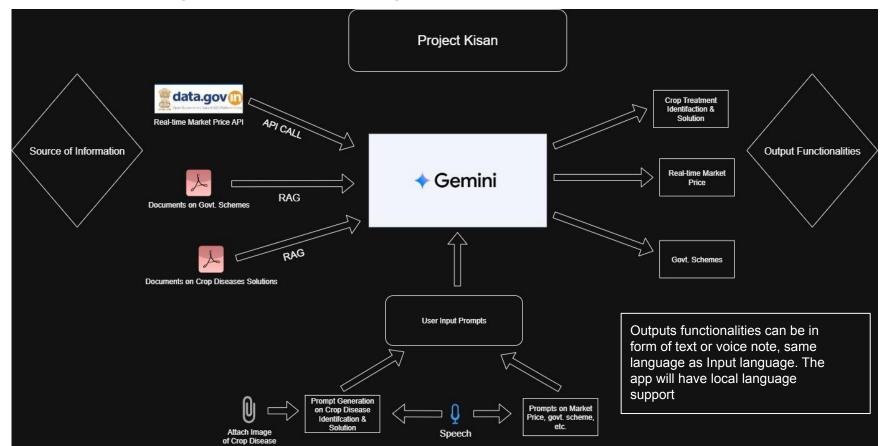
The above functionalities will have common features like, *native language support*, *alerts and notifications*, *voice support*, & other features like weather forecasting, import-export demand forecasting, etc.







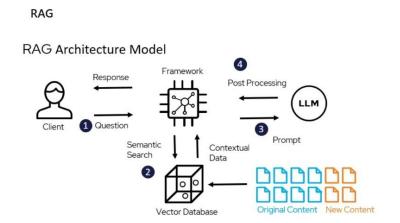
Process flow diagram or use-case diagram



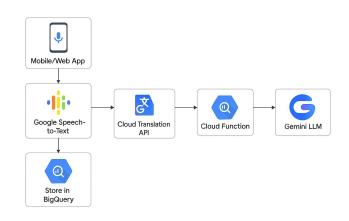




Technologies to be used in the solution



- For Crop Disease Identification & Solution
- Govt. Schemes with personalized recommendations
- Gemini integrate with external API for Market Analytics

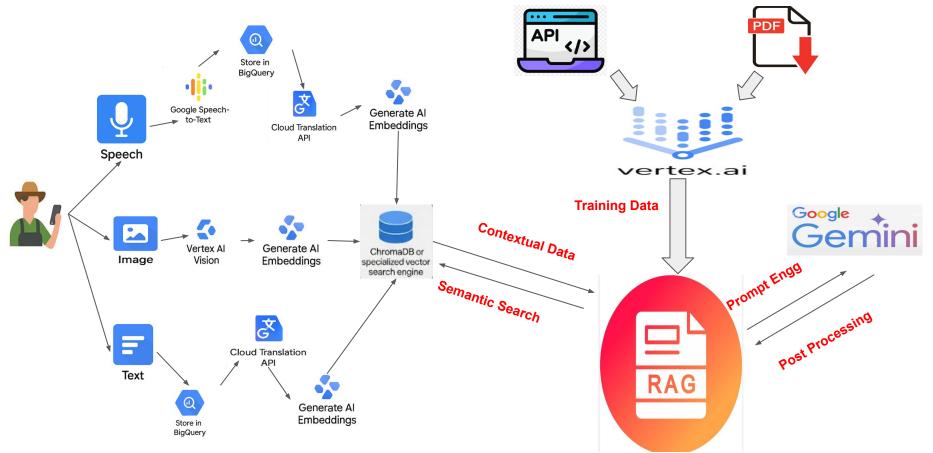


For Speech and Local Language Support

The entire PoC will be developed in *Python* and following frameworks/libraries will be used: *Langchain, ChromaDB, BigQuery, Gemini, Streamlit, VertexAI, Firebase*



Architecture diagram of the proposed solution

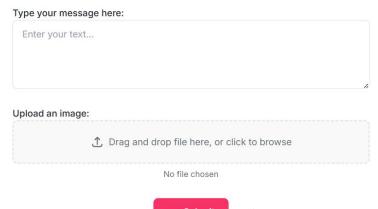






Wireframe of Diagnosing Crop Diseases and Solution

Kisan Al App - Crop Disease Detection



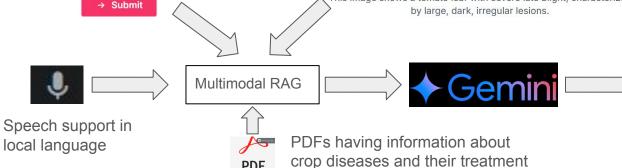


This image shows a tomato leaf with severe late blight, characterized by large, dark, irregular lesions.

Examples of Data Source:

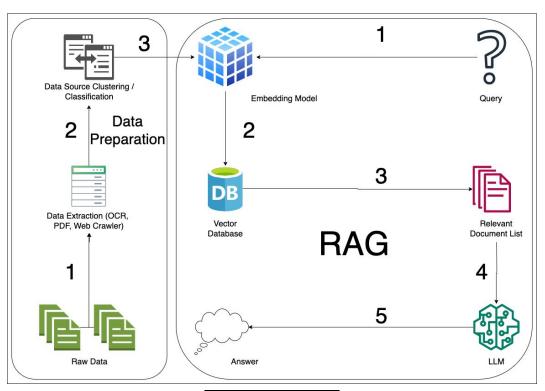
https://agritech.tnau.ac.in/ pdf/8.pdf.

https://www.kaggle.com/d atasets/jawadali1045/20kmulti-class-crop-disease-i mages;



Disease Identification and Solution. Output can be shown in both text/voice form of local language based on Input language

Wireframe of Govt. Schemes Q&A and Recommendations



Relevant PDF files about different Govt.
Schemes would be integrated into the model. Example source of data:

https://sansad.in/getFile/loksabhaquestions/annex/1714/AU1506.pdf?source=pgals;

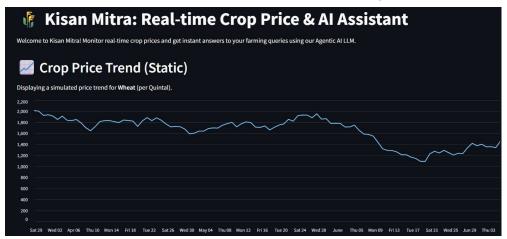
https://www.indiansugar.com/PDFS/GOVE RNMENT_SCHEMES_FOR_AGRICULTU RE Revised-26.12.2019.pdf;

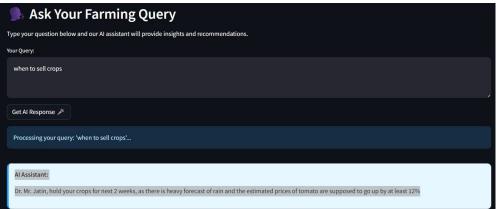
 User can ask in local language about different Govt. schemes available. Relevant and best scheme would be recommended based on farmer's requirements. Output will be shown in local language both in text form and voice form





Wireframe of Real-Time Market Analytics of Crops





- Provide insights to historical data of crop prices
- Recommend the farmer when to sell the crop based on the Agentic AI application's forecasting power of prices
- Empower farmer by letting them ask questions specific to weather, soil condition, etc. and combine with their personal expertise about when to sell the crop
- Output can be shown in language based on input language. It will be in form of text or voice note

API for Data:

https://www.data.gov.in/resource/current-daily-price-various-commodities-various-markets-mandi



Query can be asked both ways, either by typing or by speech, that too with local language support



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Thank you!