BirdWatching App

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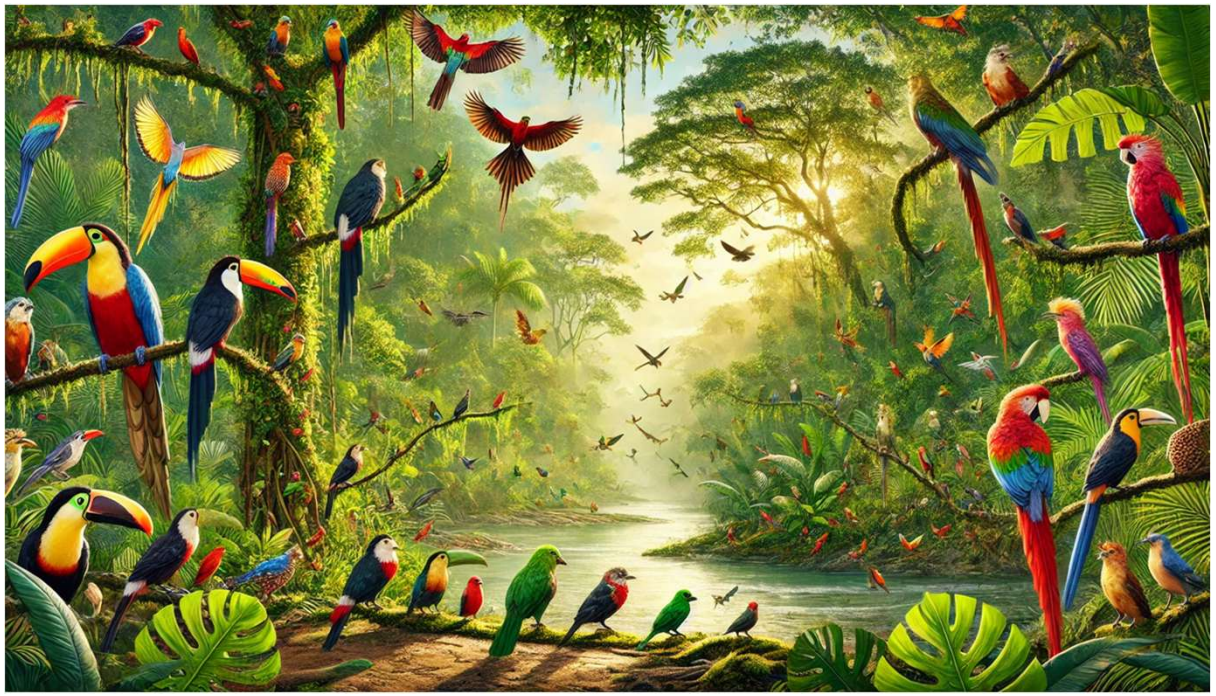
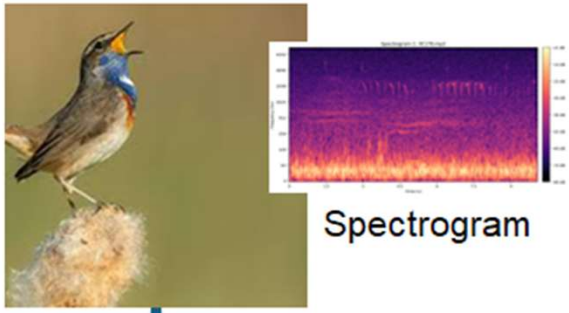
The Problem



- Hundreds of bird species are unique to national parks in Peru
- Reliable info often unavailable
- Tourists lack tools to explore local birdlife in those areas

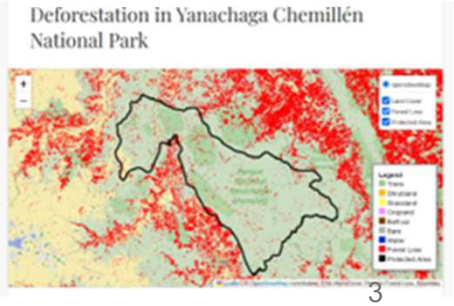
Solution: BirdWatching App

Identifies common bird species using BirdNet model



Rare species with own transfer learning CNN model

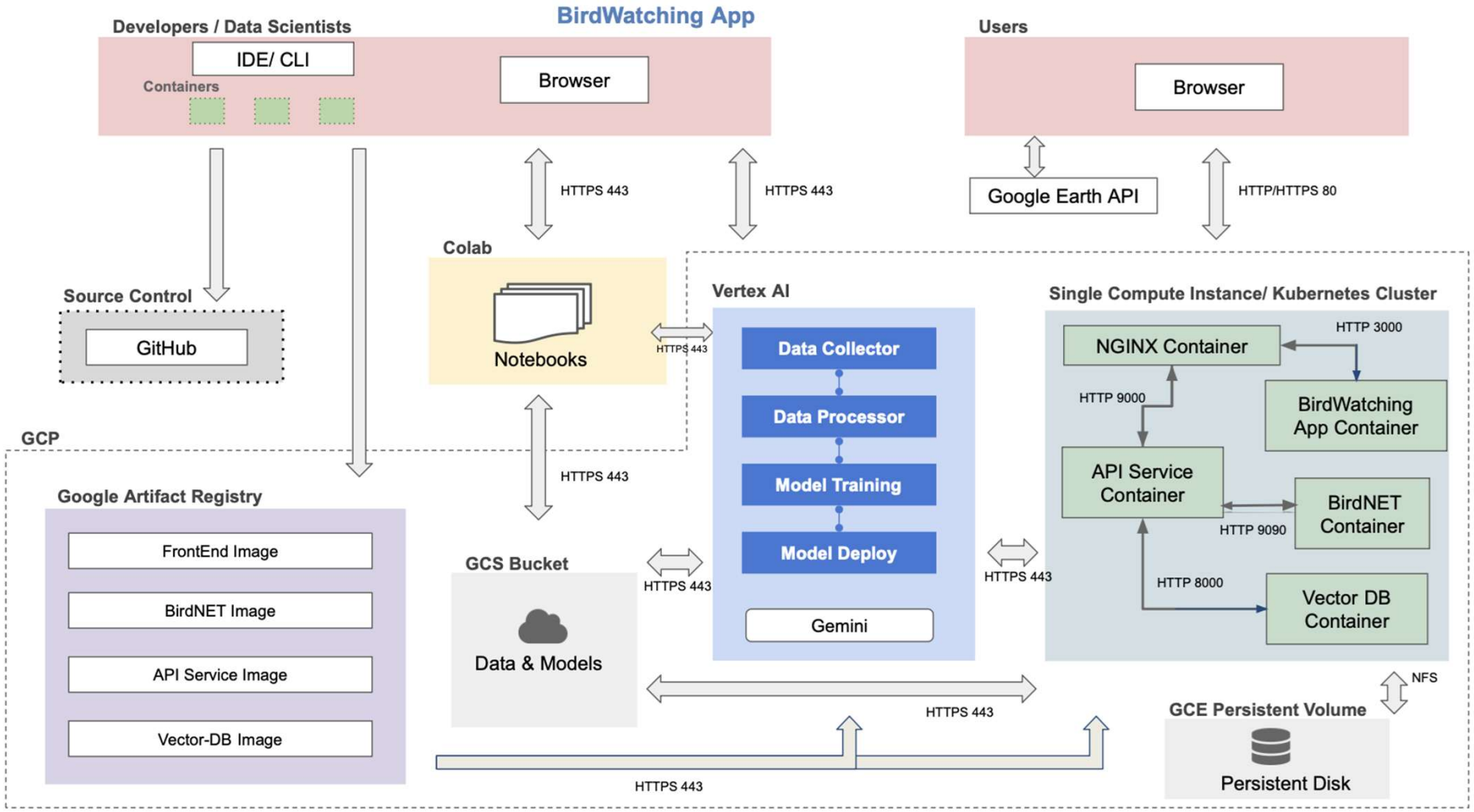
Displays interactive maps with remote sensing data



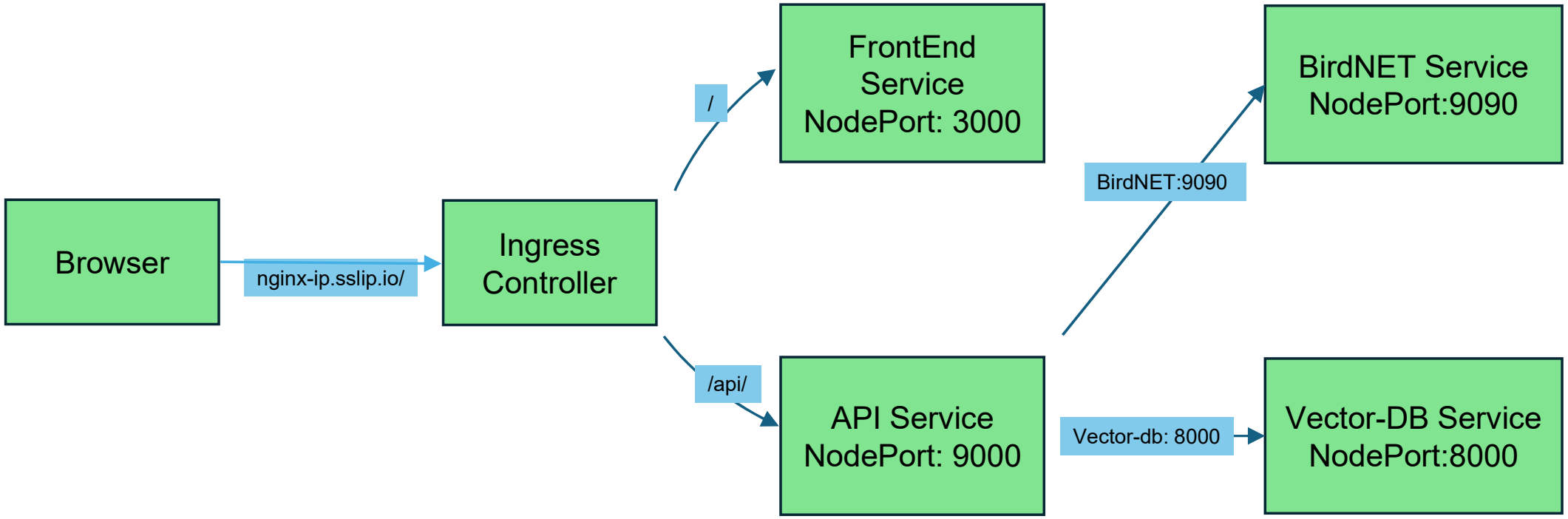
Answers specific queries via LLM agent


Live BirdWatchingApp Demonstration

Technical Architecture



How Services Communicate in Kubernetes Cluster



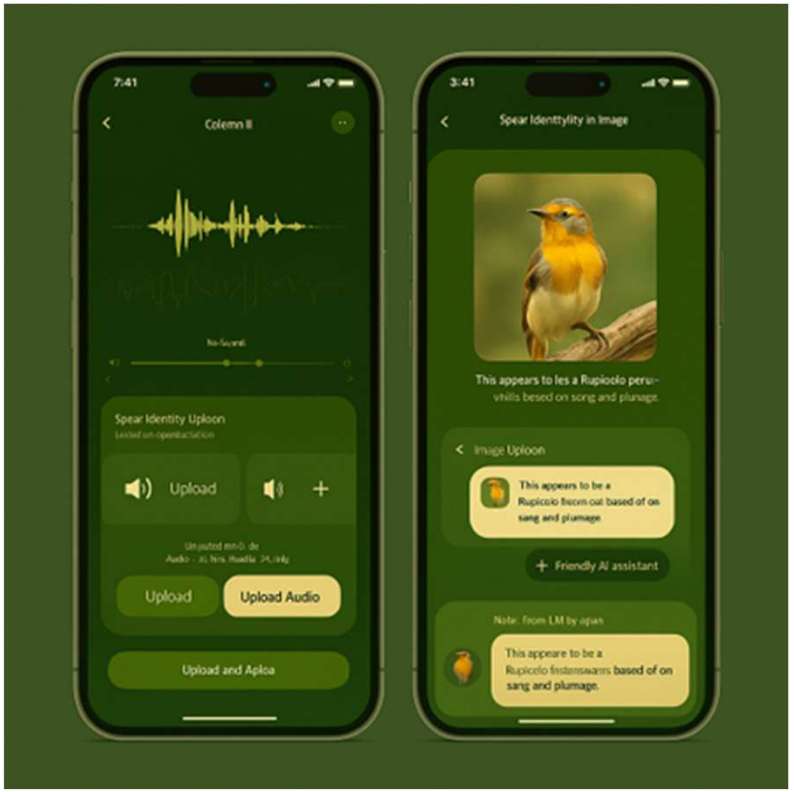
Challenges Faced and Solutions Implemented

Challenges	Solutions
Different operating systems (Windows / Mac M2 / Mac M4)	Developed Windows and Mac versions of the App
Conflicting packages (specific versions for birdnet, e.g., librosa = 0.9.2)	BirdNet and transfer learning model in own container
Containerize Google Earth Engine maps due to authentication hurdles	Built maps in leaflet and displayed them in the frontend only

Future Work

Improved Functionalities:

- Mobile responsive design
- Multimodal inputs - both audio and image
- Reduction of background noise
- Include additional rare species
- Spectrogram visualization



Thank You!

We appreciate your time and interest in our bird-watching app project.

Github repository: https://github.com/jgaryi/E115_BirdWatchingApp