



Beta Presentation

Habitat Identification Using Drone Imaging

The Capstone Experience

Team GM

Sungu Han

Shane Carr

Yigit Gunduc

Ryan Meitzner

Tanner Shirel

Noah Homyak

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*From Students...
...to Professionals*

Project Overview

- Nearly every GM facility has an extensive natural habitat with rich biodiversity nearby
- Manual species monitoring is time-intensive and impractical
- Our software identifies and logs plant species using machine learning
- Greatly increases efficiency in tracking biodiversity and supporting environmental conservation efforts



Team Member's Technical Tasks

Technical Tasks Assigned

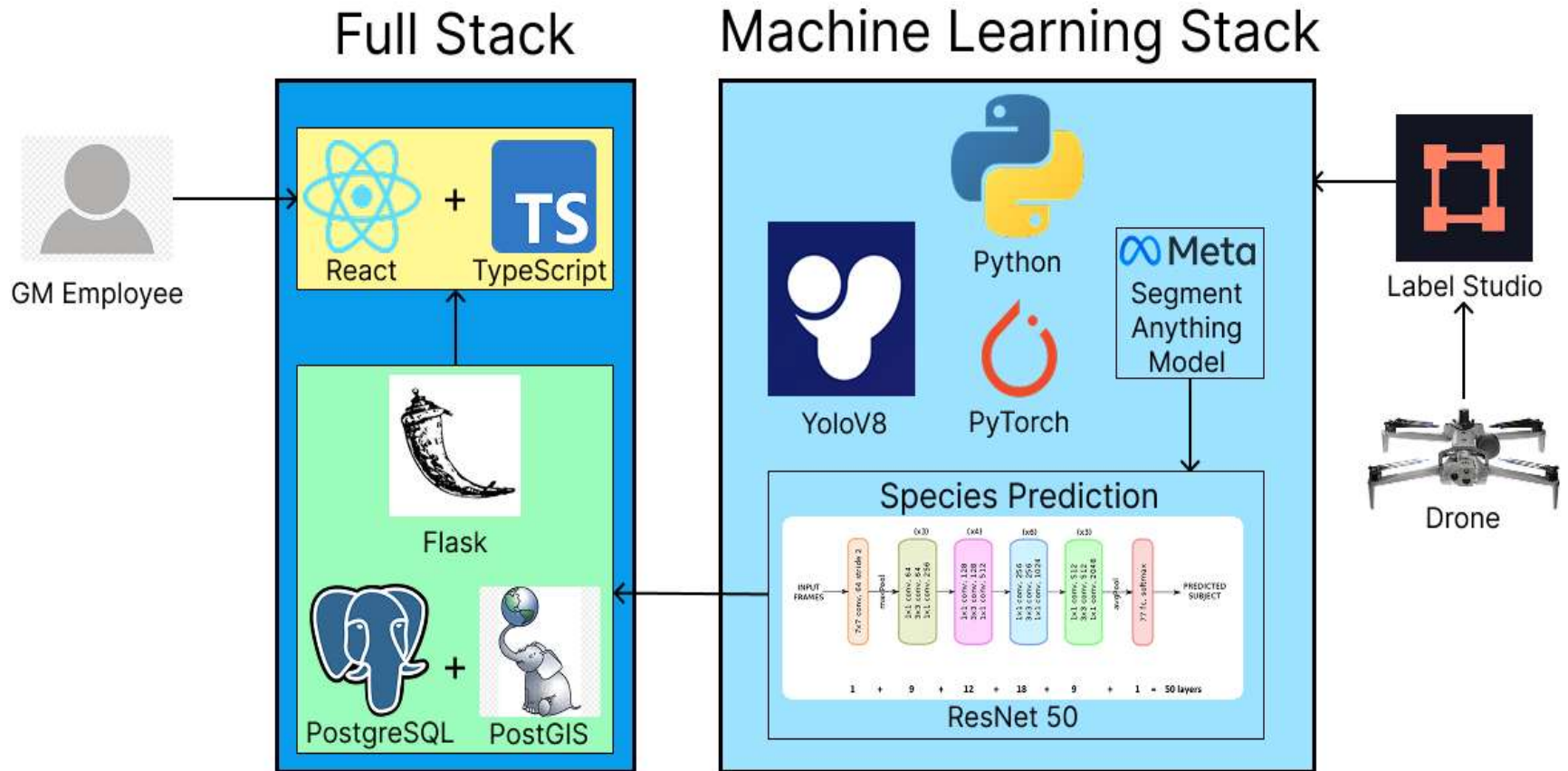
- Sungu Han
 - Routes for post and get of each table, Routes for the review page
 - Machine learning pipeline: Edge detection and incorporation within pipeline
 - Frontend : Chatbot component and review page updates
- Tanner Shirel
 - Backend: Data ingestion pipeline
 - Frontend: Maps page
 - Backend: Image metadata and prediction coordinates calculation
- Yigit Gunduc
 - Machine Learning: Setting up Sam, Yolo, and custom
 - ML API: Pipeline to segment and detect crops and respond to requests from frontend
 - Local Llama model and MCP protocol
- Ryan Meitzner
 - Backend: Create routes for Analytics page
 - Frontend: Integrate full frontend functionality for analytics page
 - Create Initial Map page
- Noah Homyak
 - Integrating review page as feedback for the pipeline
 - Designing and implementing image processing page
 - Creating initial database schema
- Shane Carr
 - Machine Learning: YOLOv11 model and training
 - YOLO pipeline and data consumption from model output
 - Maps page set up, Landing page

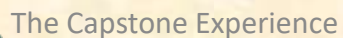
Technical Tasks Completed

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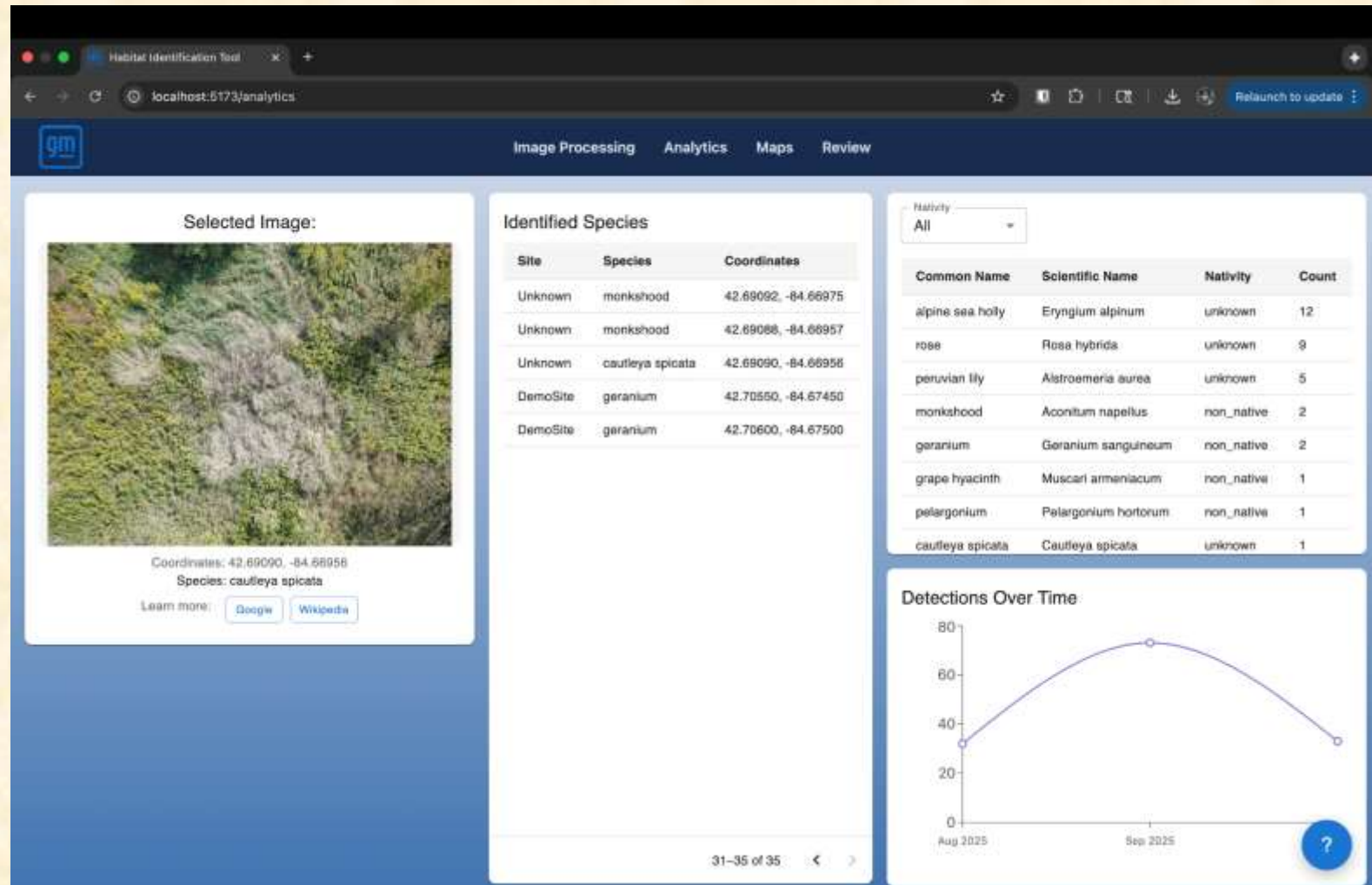


System Architecture

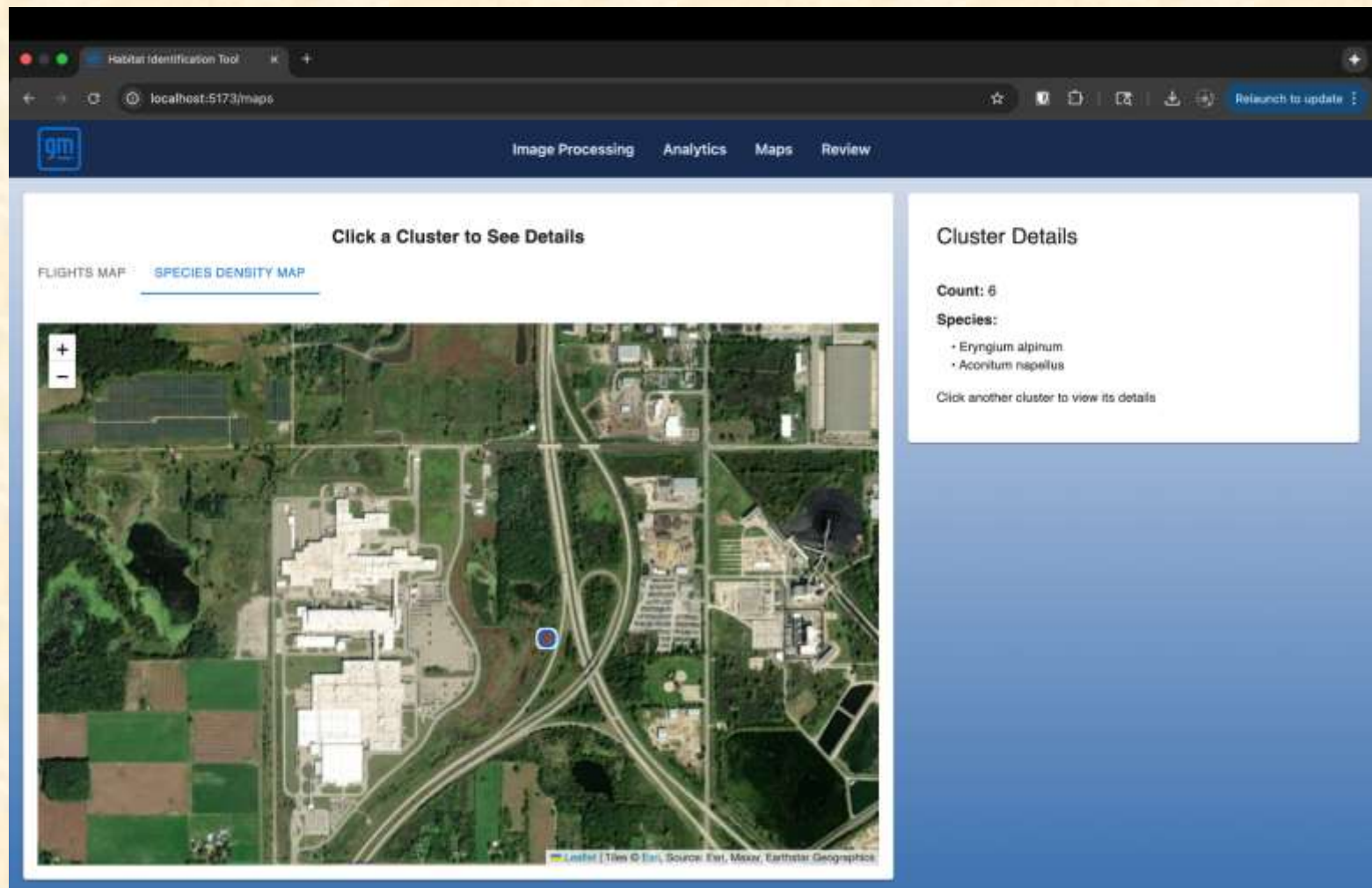




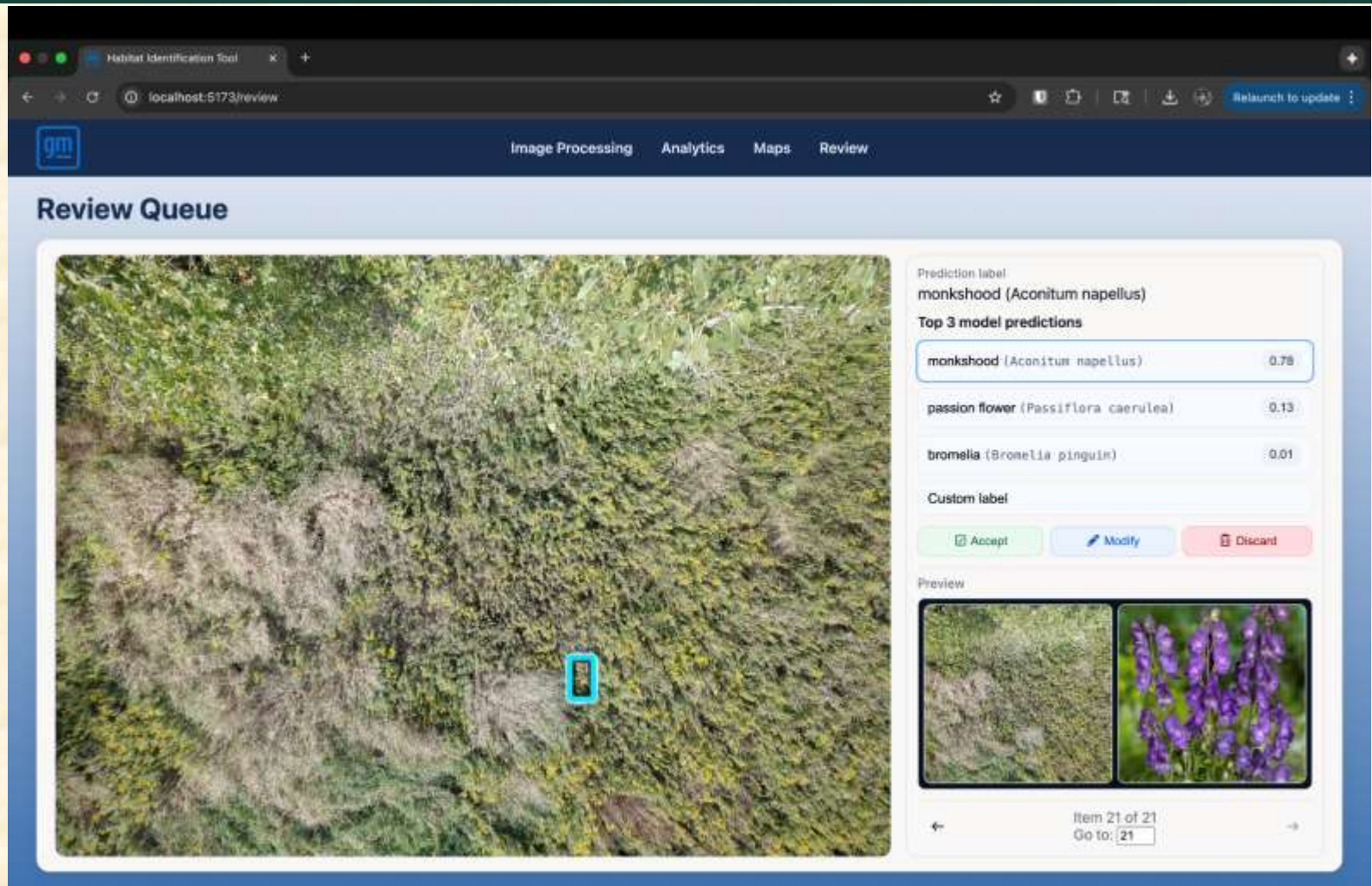
Analytics Page



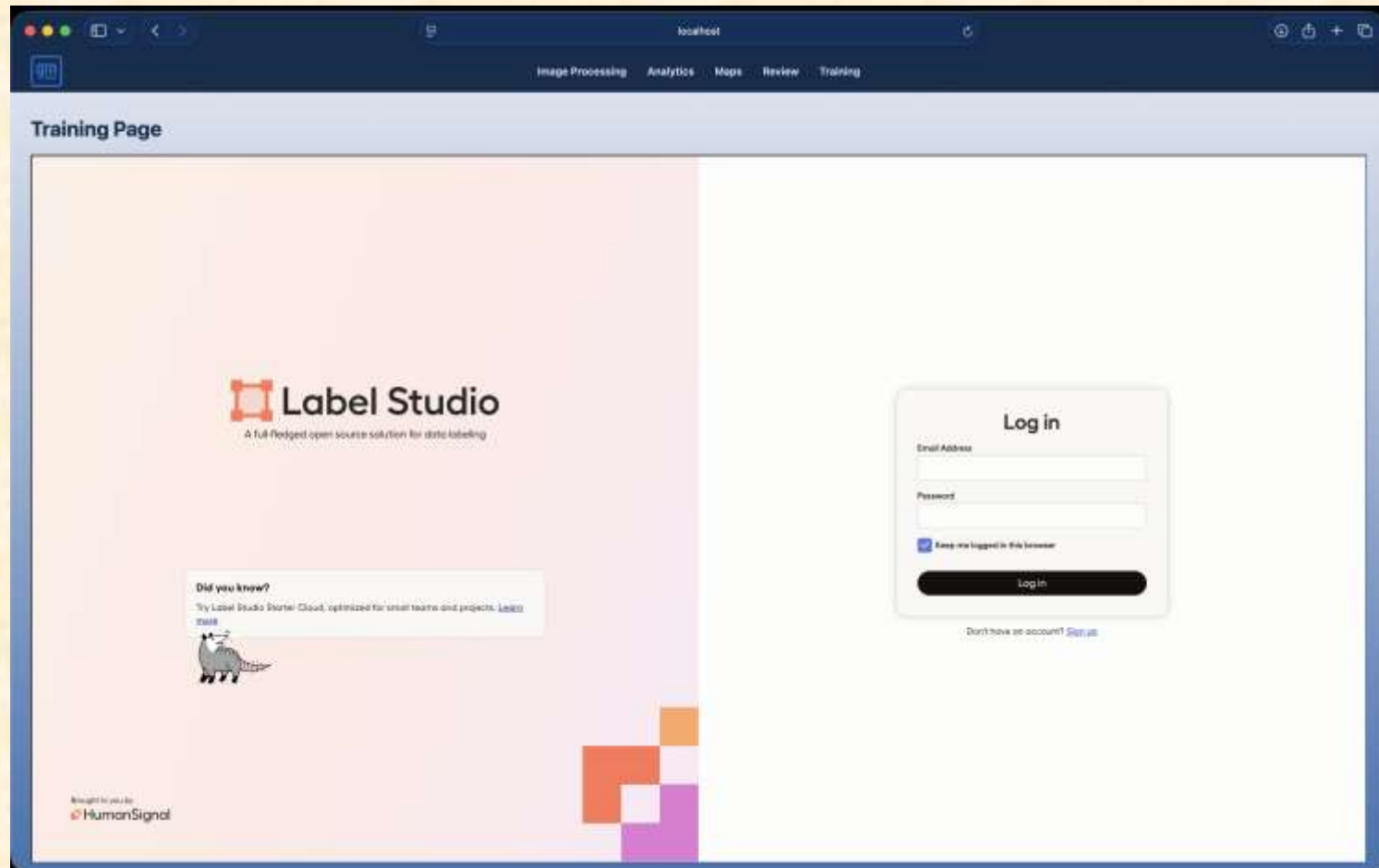
Maps Page



Review Page



Training Page



What's left to do?

- Stretch Goals
 - Exportation of analytics to SharePoint list
 - Retraining loop of the model
- Other Tasks
 - Training the model to make it as accurate as possible
 - Optimization of infrastructure

Questions?

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