OrbitWatch User Guide

Distributed Satellite Imagery Labeling Platform

Capstone Project – Team 11

Kartik Chaudhari
Kyle McMaster
Mathew Petronilho
Oleg Glotov

Table of Contents

1. Introduction

OrbitWatch is a professional web-based platform designed for efficient, accurate, and large-scale labeling of satellite imagery. Built for scalability and ease of use, OrbitWatch serves two primary users:

- **Labellers**, who annotate satellite imagery for machine learning and analytical purposes.

- **Clients**, who create labeling tasks and manage image datasets for custom annotation projects.

The platform offers:

- A seamless labeling workflow

- A custom-built annotation tool

- Real-time progress monitoring

- AI-assisted pre-processing

---

2. Definitions

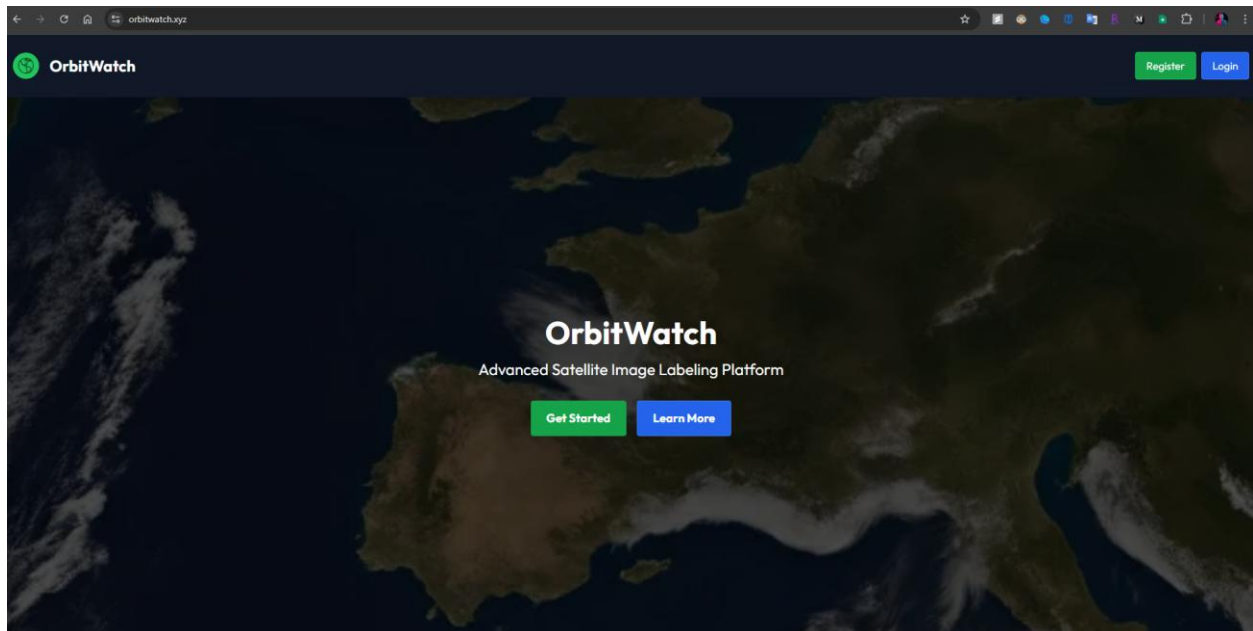| Term	Description
Labeller	A user who annotates or labels objects in satellite images.
Client	A user who uploads image datasets and manages labeling projects.
Labeling Tool	Interactive interface used by labellers to annotate objects.
Project	A collection of images grouped by a client for labeling.
Annotation	A labeled object within an image (e.g., a bounding box around a plane).
Bounding Box	A rectangular shape drawn to highlight an object in an image.

---

3. System Requirements

To ensure a smooth experience with OrbitWatch, the following system requirements are recommended:

- **Web Browser**: Google Chrome (preferred), Mozilla Firefox, Microsoft Edge (latest version)

- **Internet**: Stable broadband connection (5 Mbps or higher)

- **Device**: Desktop or laptop (mouse recommended for precision labeling) or Mobile

- **Screen Resolution**: 1280x720, optimal at 1920x1080, Standard Mobile Screen Resolution (720x1280)

---

4. Accessing OrbitWatch

1. Open a supported browser.

2. Navigate to: https://orbitwatch.xyz

3. Use the **Register** button if you are a new user.

4. Use the **Login** button to access your account if you are a returning user.

---

5. Creating an Account

Labeller Registration

1. On the registration page, select **Labeller**.
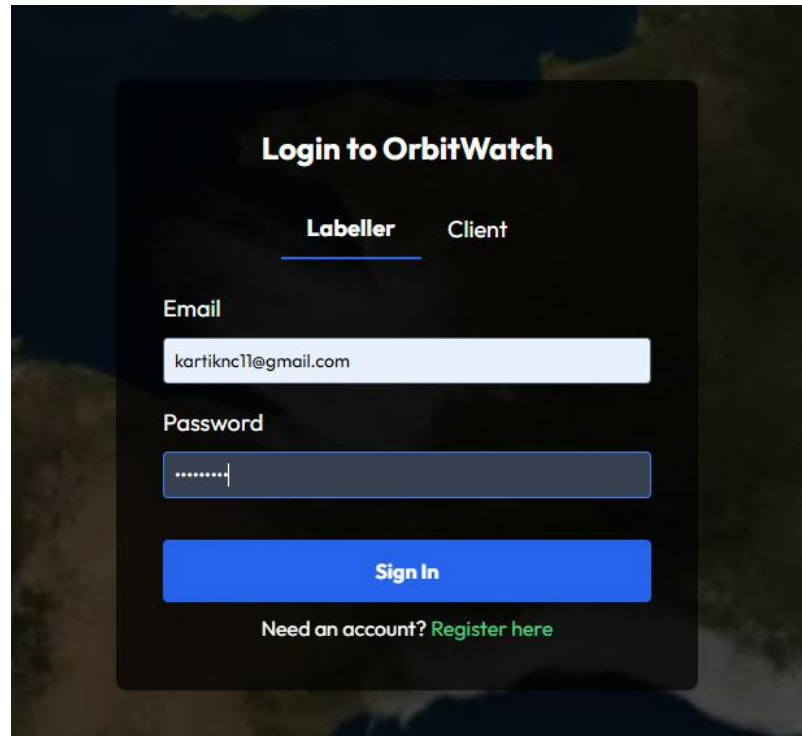
2. Provide:

    o Full Name

    o Email Address

    o Password (with confirmation)

    o Areas of Expertise (e.g., identifying airplanes, vegetation, roads)

    o Availability (days/hours per week)

3. Click **Register as Labeller**.

4. You will be redirected to the Labeller Dashboard upon successful registration.

5. Returning Labellers can simply login.

Client Registration

1. Select **Client** on the registration page.
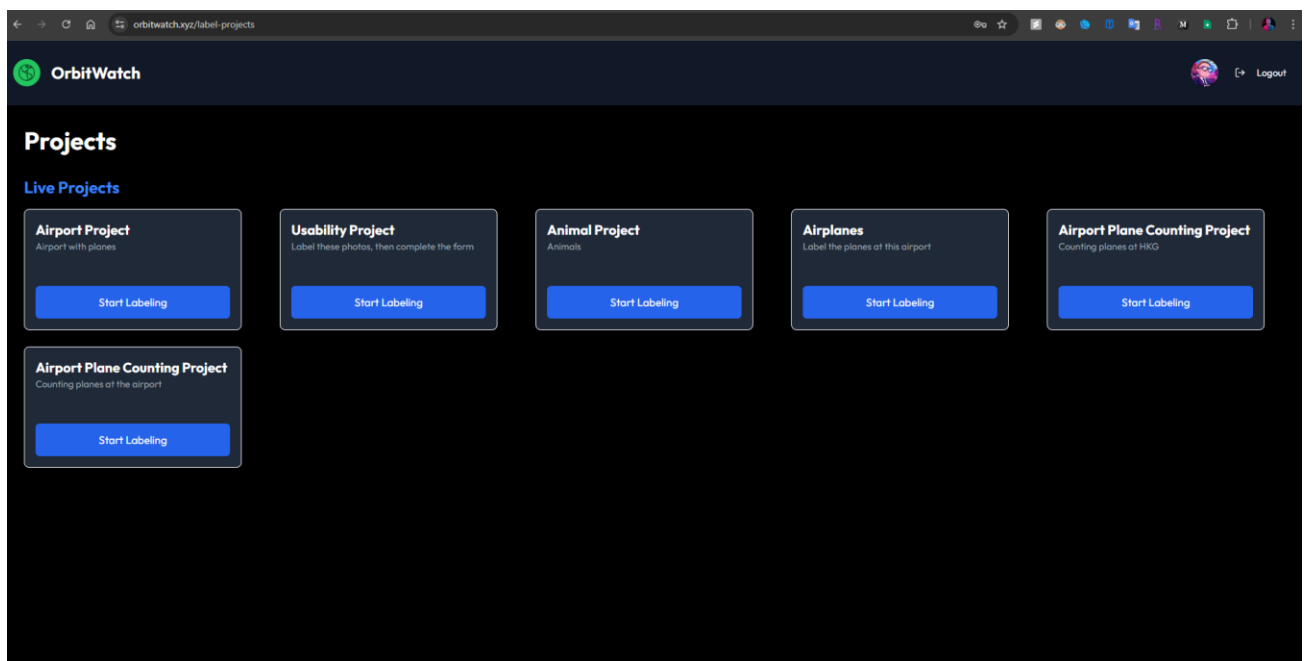
2. Provide:

    o Organization or Personal Name

    o Email Address

    o Password (with confirmation)

    o Project Interest or Objective

3. Click **Register as Client**.

4. You will be redirected to the Client Dashboard.

6. Using the Platform as a Labeller
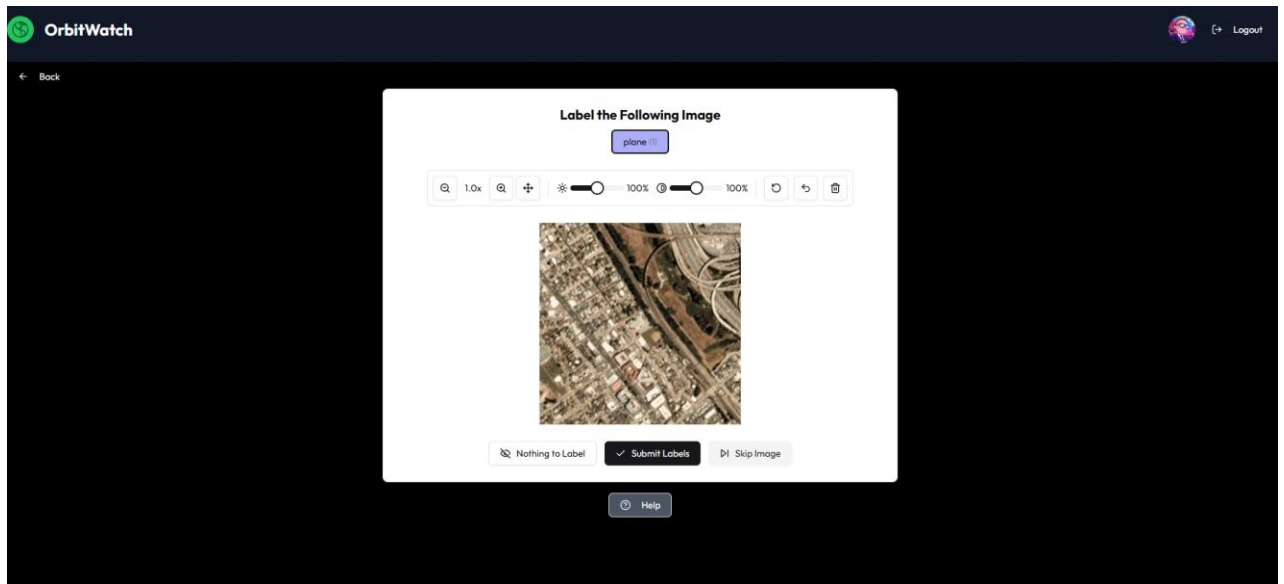
Dashboard Overview

After login, labellers are presented with:

- List of available **Live Projects**

- Progress Section for any projects underway

- Project completion status

- A progress tracker showing number of images labeled

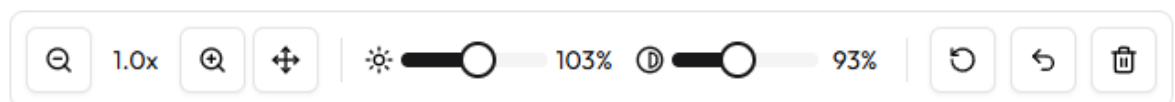- Access to tutorials and account settings

Starting a Project

1. Select a project from the **Live Projects** list.

2. Click **Start Labelling**.

3. You will enter the labeling interface.
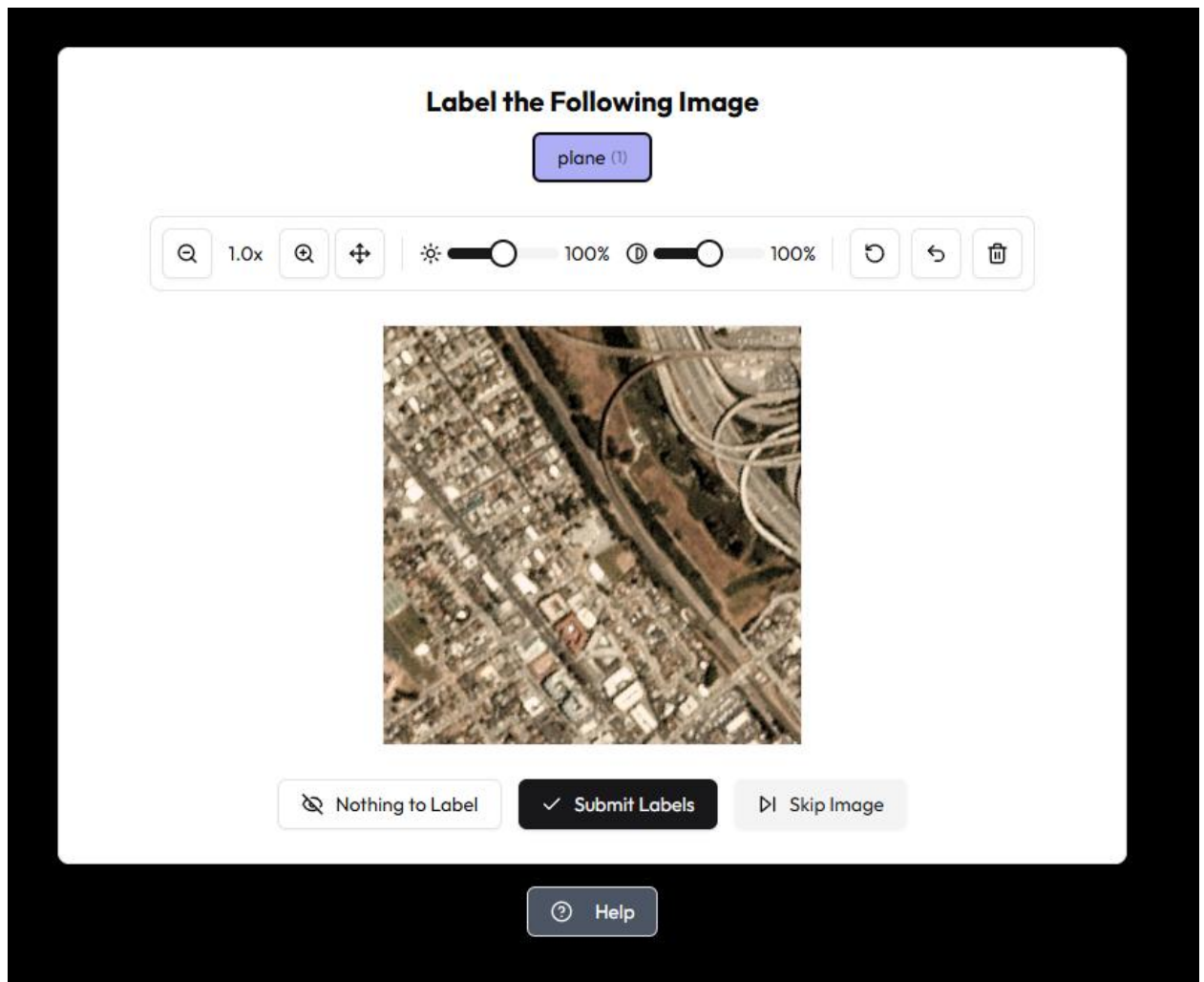
Using the Labeling Interface

Tools available:

- **Zoom In/Out**: Magnify or reduce the image view.

- **Pan Tool**: Navigate across large image areas.

- **Brightness/Contrast**: Adjust for better visibility.

- **Reset View**: Revert to the original view settings.

- **Undo/Redo**: Revert last action or reapply.

- **Delete Label**: Remove selected bounding box.

- **Clear All Labels**: Delete all annotations from the image.

- **Draw Bounding Box**: Click and drag using the mouse.

Submitting, Skipping, and Completing Tasks

- When finished labeling an image, click **Submit Label**.

- If the image contains no relevant objects, select **Nothing to Label**.

- If unsure, select **Skip Image**.

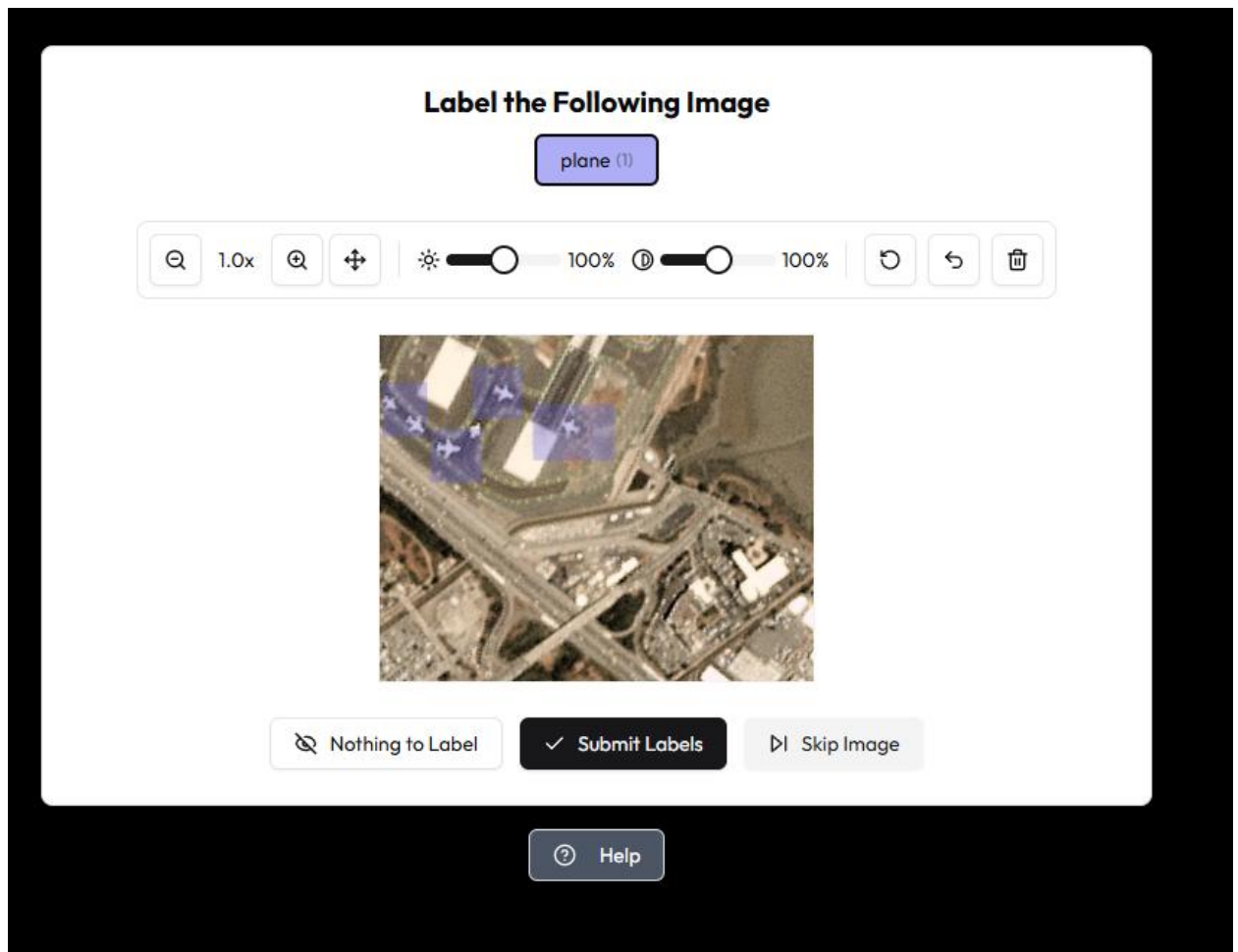# Label the Following Image

plane (1)

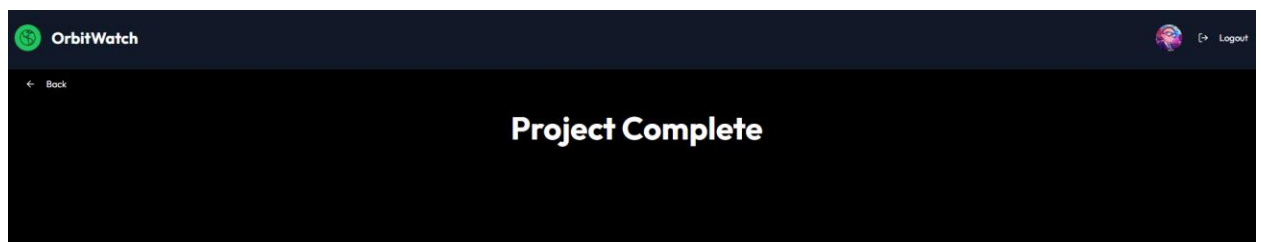|									
🔍	1.0x	⊕	✛	☀ ──●──	100%	◑ ──●──	100%	↺	↶	🗑

Nothing to Label   ✓ Submit Labels   ▷❘ Skip Image
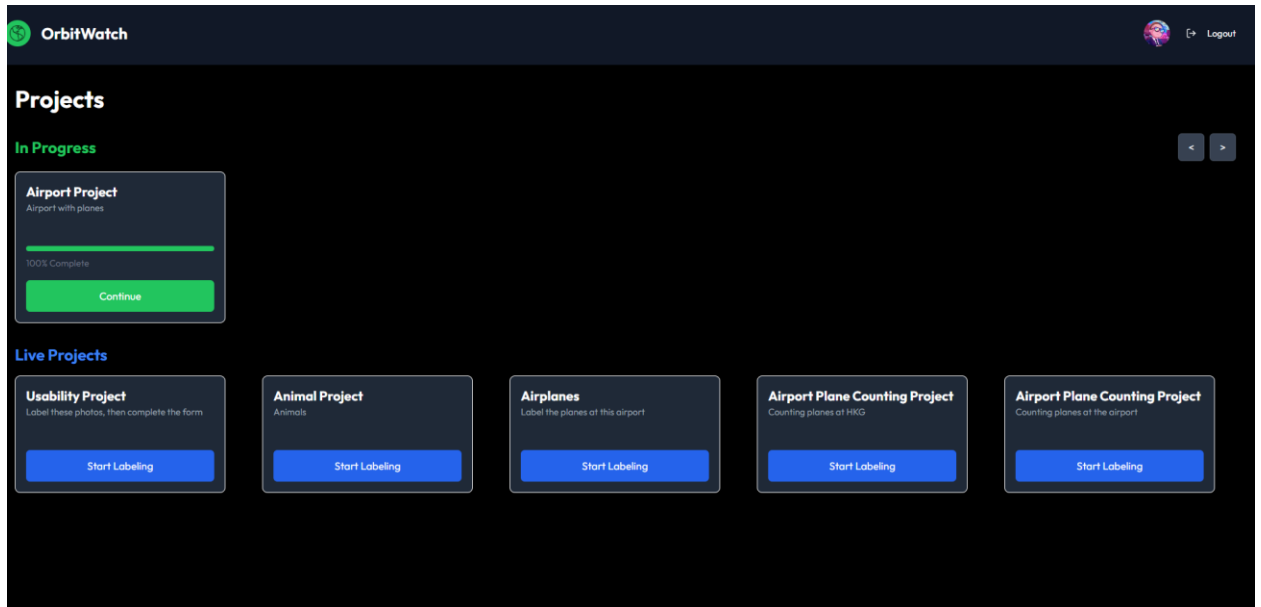
? Help

- Once all images in a project are completed, a confirmation screen appears.

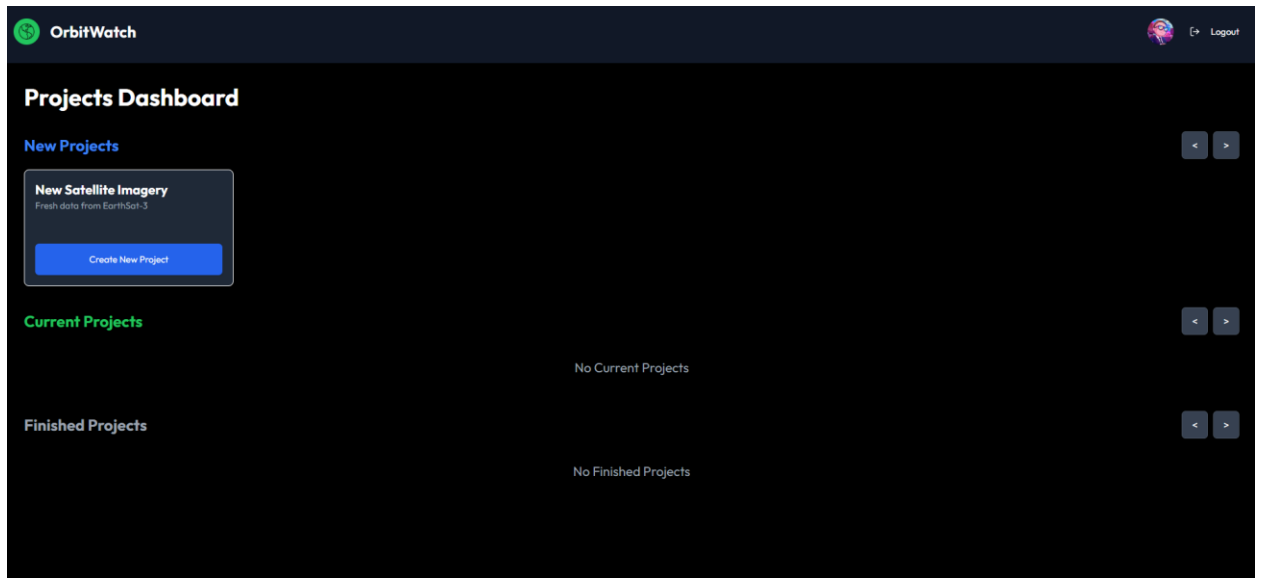- The project is marked **Complete** in your dashboard.

Keyboard Shortcuts

Action	Shortcut
Zoom In	+
Zoom Out	-
Reset View, Brightness & Contrast	R
Undo Last Label	Ctrl + Z
Delete Drawn Box	Delete
Submit Label	Enter
Nothing to Label	N
Skip Image	S

7. Using the Platform as a Client

Creating a New Project

1. From the **Client Dashboard**, click **Create New Project**.

2. Provide the following information:

   o Project Name

   o Project Description

   o End Date

   o Object(s) to Label (e.g., airplanes, ships, buildings)

   o Estimated Budget

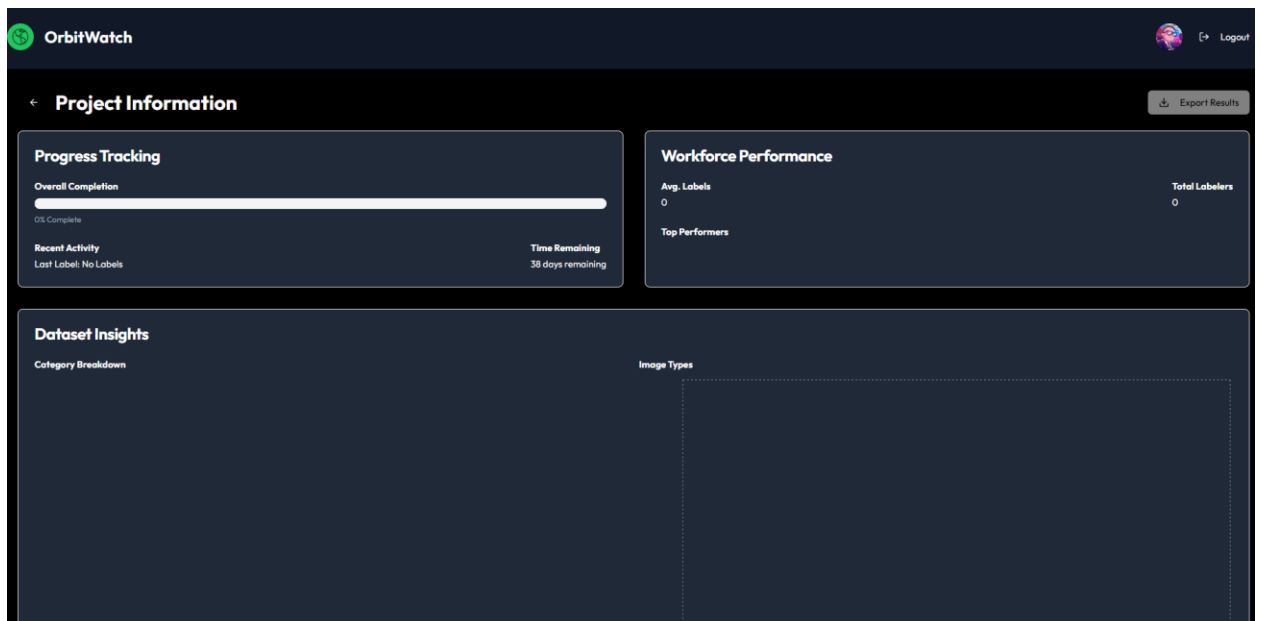**Uploading Images and Setting Parameters**

- Drag and drop images or use file upload.

- Supported formats: JPEG, PNG

- Review and confirm uploaded images.

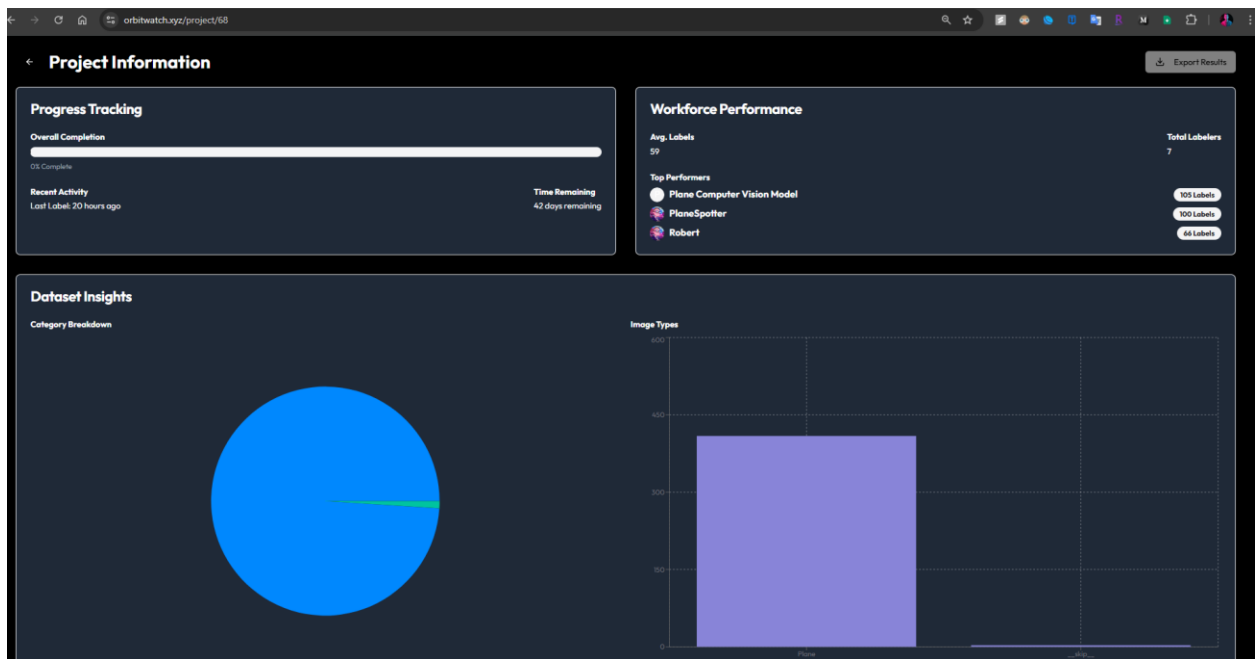- Click **Create Project**.

Monitoring Project Progress

Clients can track:

- Percentage completion

- Progress Section for any projects underway

- Total images labeled

- Individual labeller contributions

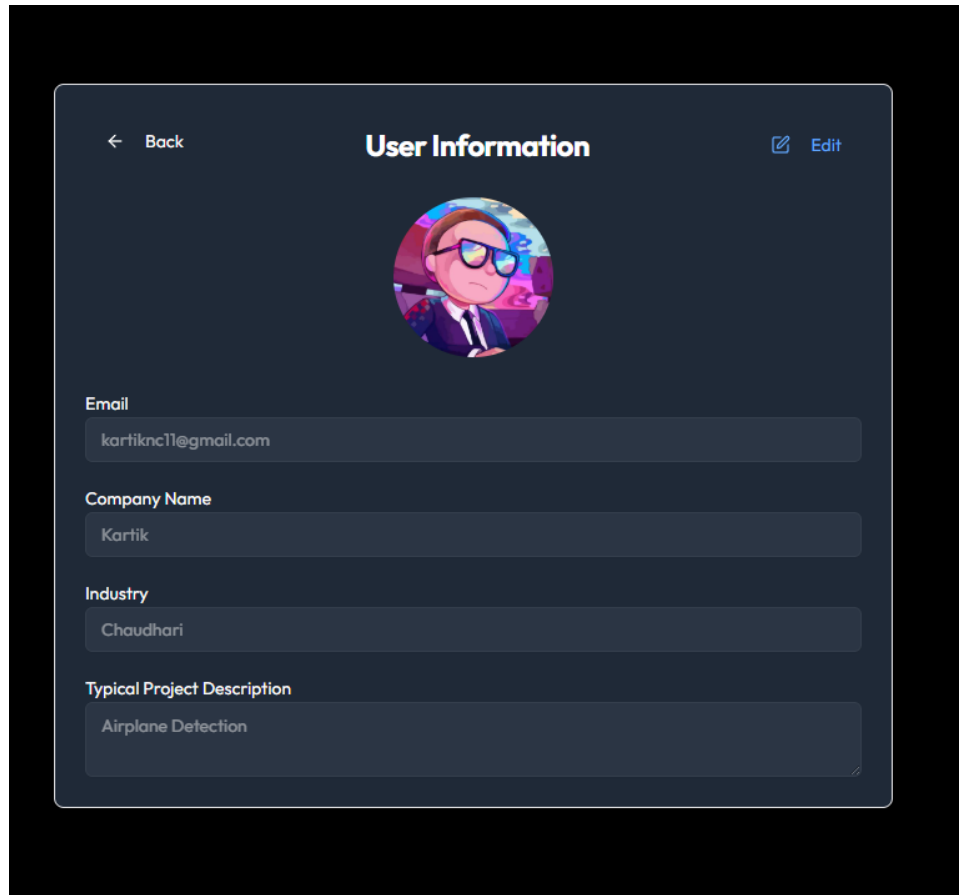- Object label frequency and image insights

Reviewing Results

1. Click **View Project**.

2. Download labeled datasets.

3. Review individual image annotations.

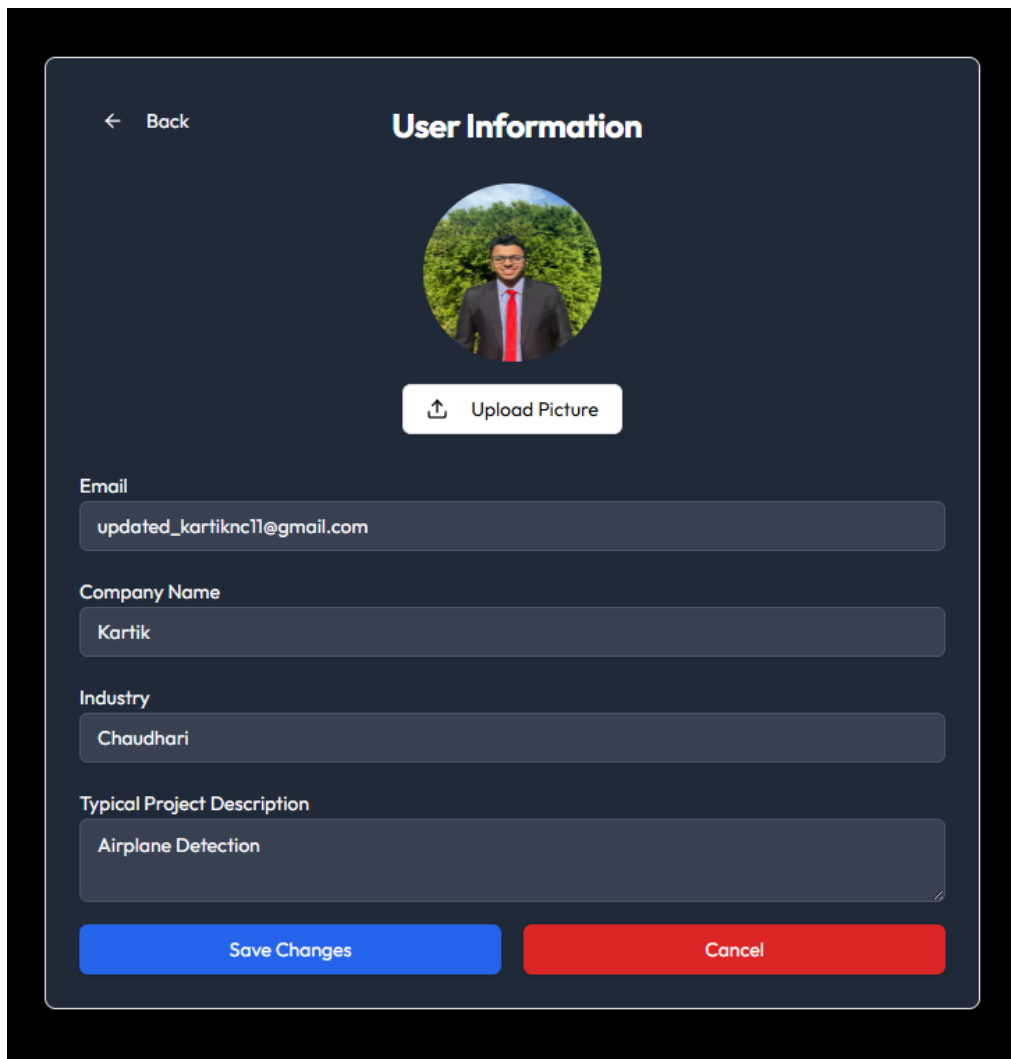4. Project status changes to **Finished** upon completion.

8. Profile Management

All users can update profile information:

- Click on the profile picture (top-right corner).
- Options include:
  - Edit Name
  - Update Email or Password
  - Change availability (Labellers only)
  - Upload a profile picture
  - View personal stats and history

---

9. Help & Tutorials

OrbitWatch offers a built-in tutorial:

- Accessible from dashboard and labeling interface.
- Covers:
  - Platform navigation
  - Labeling best practices
  - Tool usage and shortcuts
- Includes sample walkthroughs and practice tasks.

Label the Following Image

dog (1) | cat (2)

🔍 1.0x 🔍 ✛   ☀━━○ 100% ◑━━○ 100% ↻ ↺ 🗑

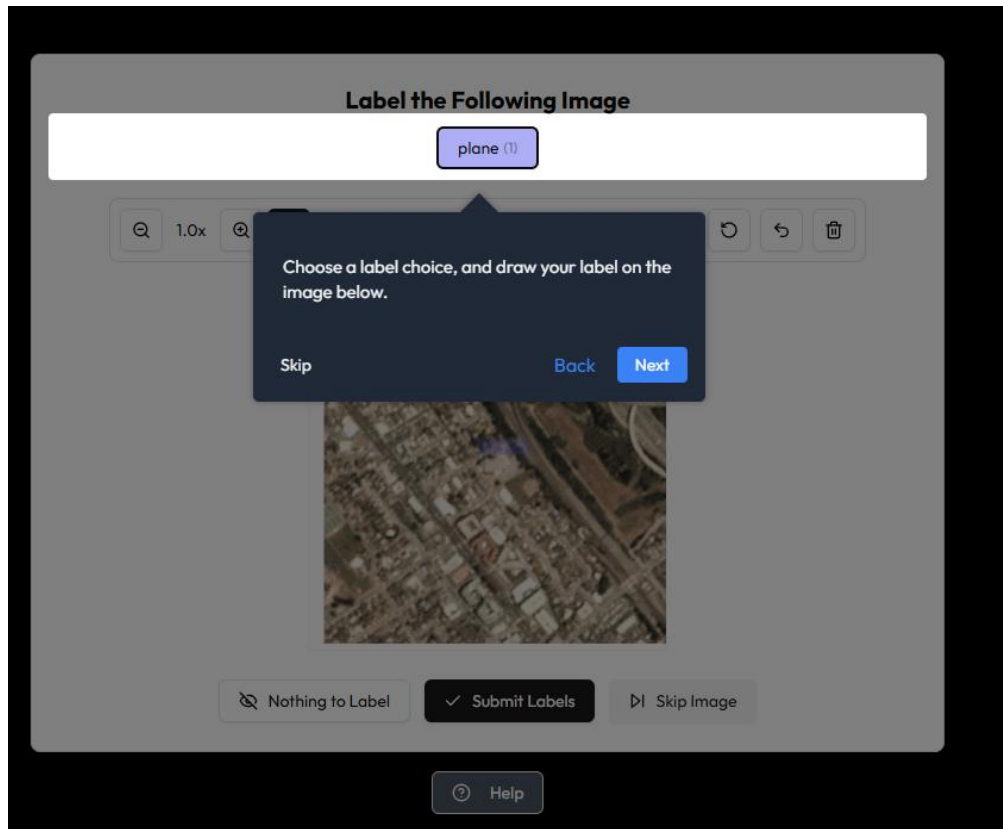🚫 Nothing to Label | ✓ Submit Labels | ▷| Skip Image

Welcome to the tutorial! Here's a small demonstration before we start.

Skip   Next

---

10. Troubleshooting

Issue	Solution
Cannot log in	Verify credentials or reset password
Image won't load	Refresh browser or clear cache
Labels not saving	Ensure "Submit Label" is clicked
Slow performance	Close other tabs or switch browsers
Project not appearing	Confirm upload completion and page refresh

---

11. Frequently Asked Questions (FAQ)

Q1. Can I work on more than one project as a labeller?
Yes, you can participate in any live project.

Q2. Can clients label images?
No, only registered labellers can annotate images.

Q3. Can I change my user type after registration?
No, you cannot change your user type after registration.

Q4. What happens if I skip many images?
There is no penalty, but frequent skips may affect trust ratings in the future.

Q5. Is there a way to re-label an already submitted image?
No, submitted labels are final. Contact support if needed.

Thank you for using OrbitWatch.

Built by OKKM: Oleg Glotov, Kyle McMaster, Kartik Chaudhari, Mathew Petronilho