

Israeli-Indian Hackathon 2025

Team Num: T080

Team Name: Drone Developers



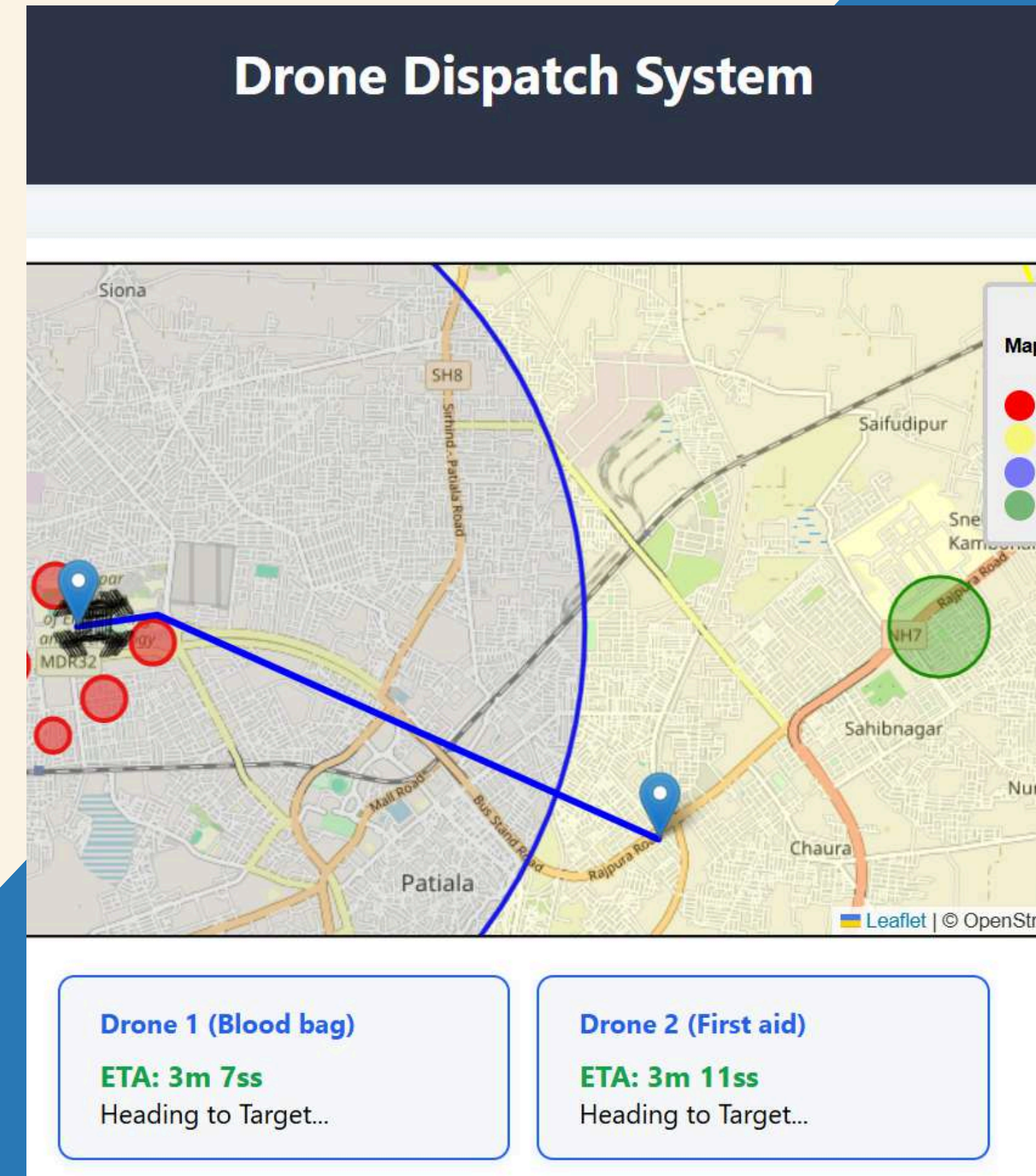
Title of Project / Idea	:	DDS (Drone Dispatch System - For Medical Supplies)
Problem Theme	:	7 - Open Innovation
Institute Name	:	Thapar Institute of Engineering & Technology, Patiala, Punjab
Team Members	:	Lakshita Agarawal ,Lahari Reddy ,Kamesh Yadav, Kaamya , Aryan, Abhinab Chhetri
Contact	:	achheri_be23@thapar.edu // 7678168319

Drone Dispatch System

For Medical Supplies

**TEAM: Drone Developers
(T080)**

**“When every second counts,
we’re in the air.”**



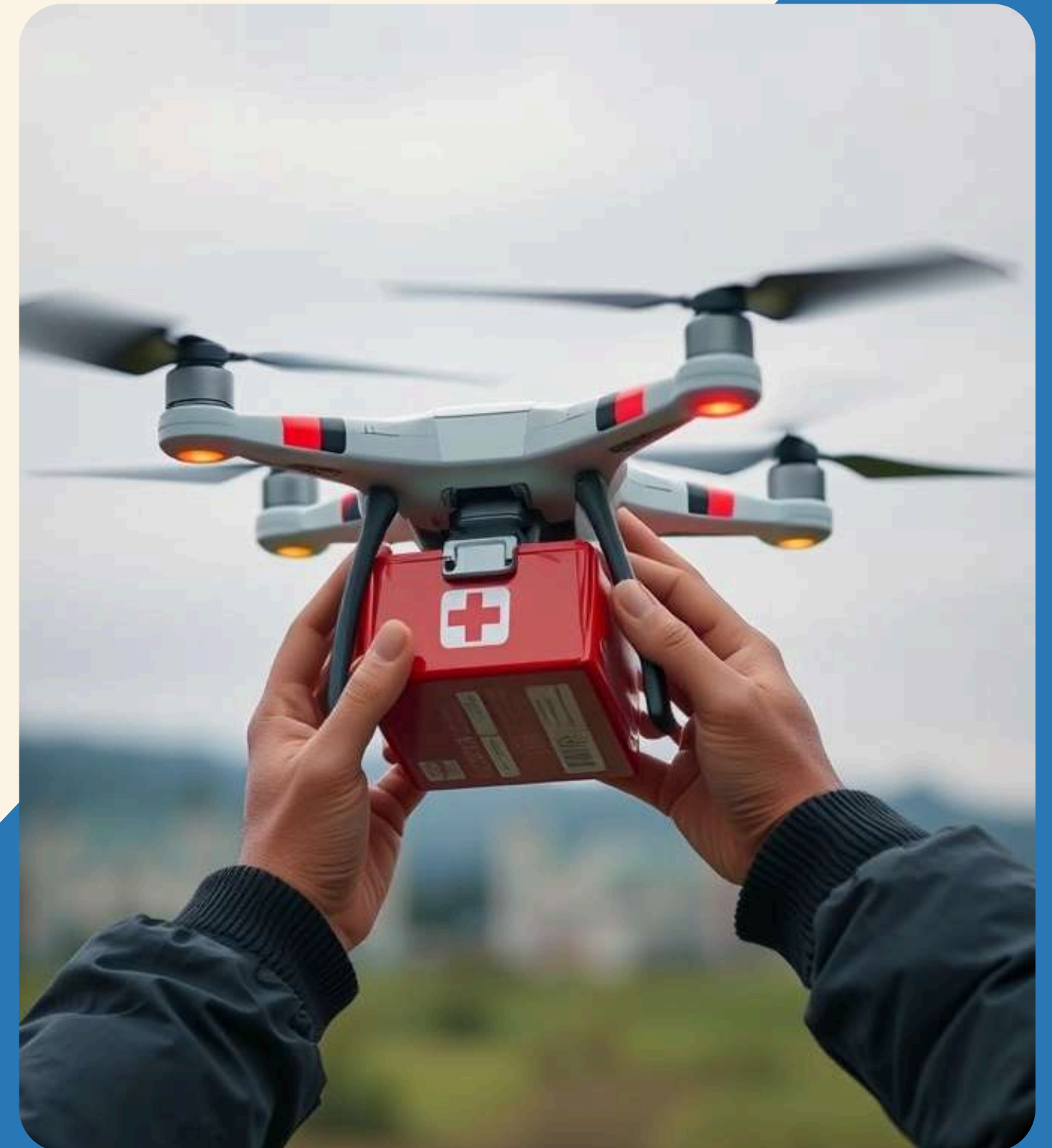
**Thapar Institute of Engineering and
Technology**

Problem Statement 07 : Open Innovation

WHAT IS THE PROBLEM?

Despite major advancements in drone technology, its **potential for rapid delivery** of essential medical supplies during critical emergencies remains **largely untapped**.

Utilizing drones for fast, reliable deliveries in these situations **can save lives** and dramatically enhance emergency **healthcare response**.



Market Research

Currently Available Solutions:

- **Zipline:** Large-scale drone delivery of blood and vaccines in Rwanda, Ghana, and parts of North America. Highly reliable with significant time savings.
- **Swoop Aero:** Integrate drone networks into existing health supply chains, mainly in Australia and Africa.

Gaps In The Market:

- Existing medical drone delivery systems are restricted to specific locations
- require expensive infrastructure and hardware
- lack flexibility for changes or fully automated operations
- Limited accessible, open-source tools for simulating drone management before real-world deployment

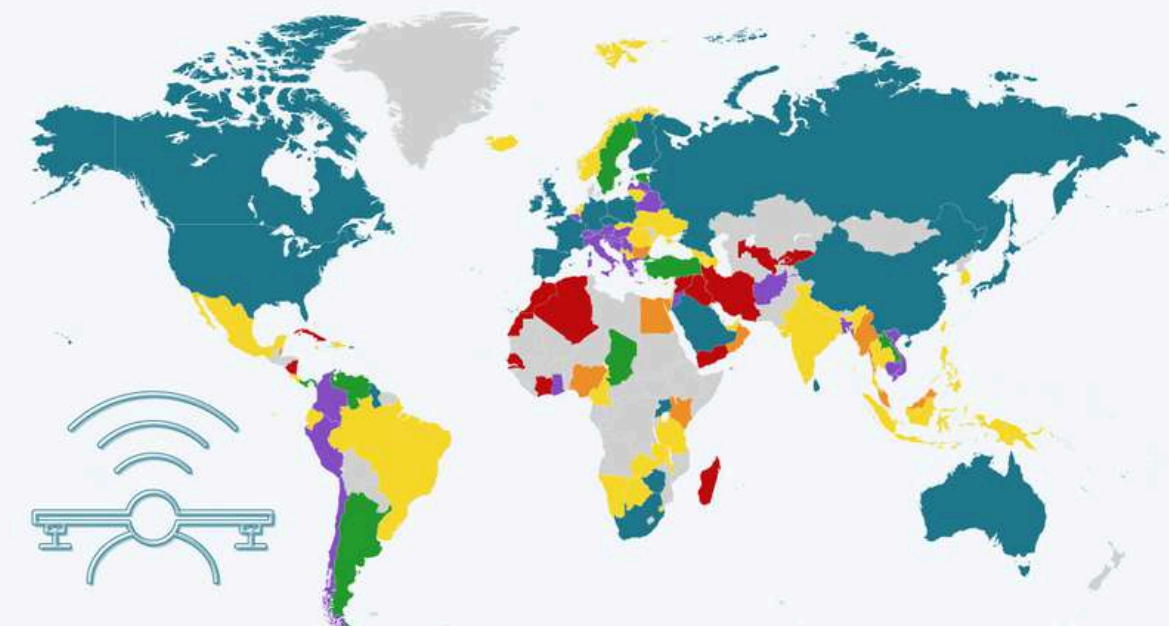


fig. Drone Model of Zipline Company

How Are Drones Regulated?

Extent to which drone flight is regulated, by country

- Unrestricted
- Experimental line of sight*
- Line of sight required
- Effective ban
- Outright ban
- Restrictions apply
- No legislation



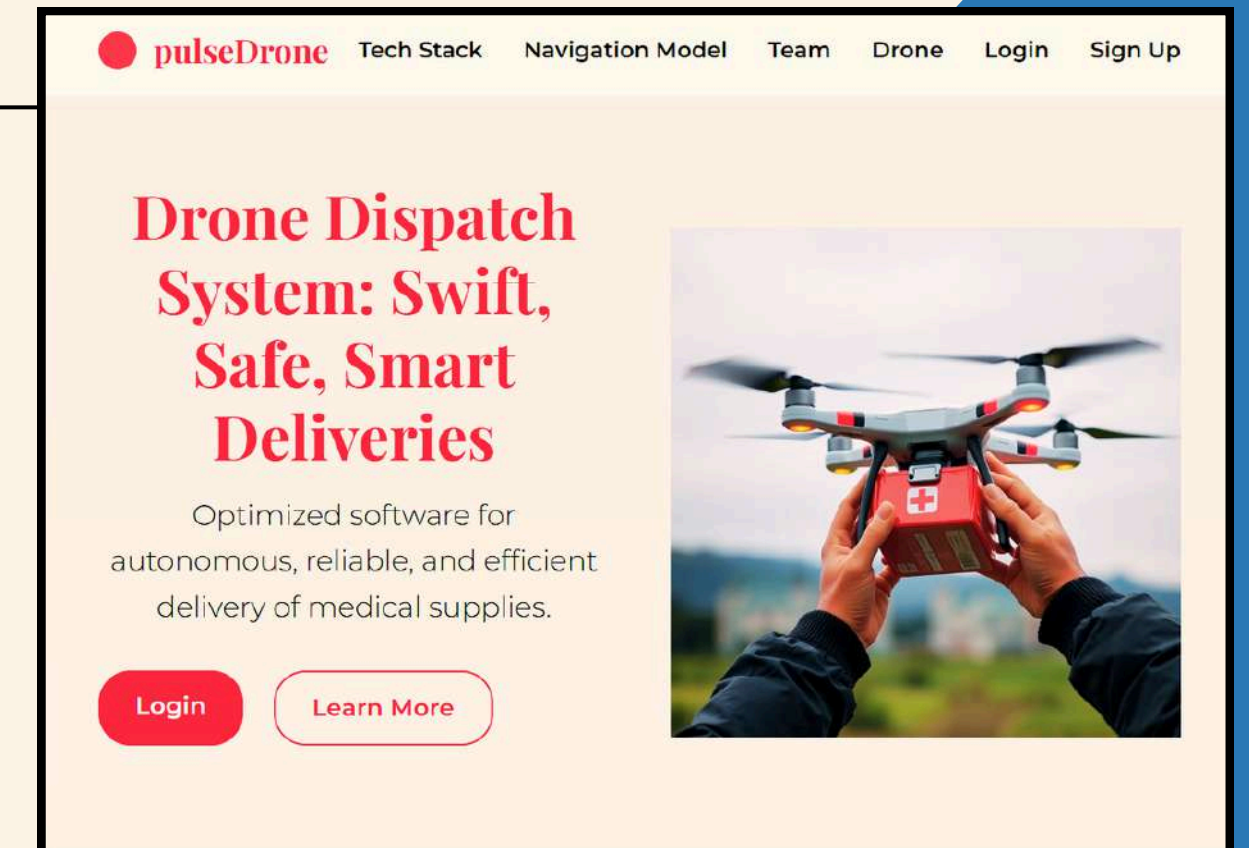
The Solution

1. We are developing a **web platform** where verified users can select from **predefined medical payloads** and specify **delivery drop-off locations**.
2. The system **autonomously dispatches drones**, simulating realistic, real-time deliveries along machine learning-**optimised routes**.
3. It **continuously monitors drone operations**, automatically optimising for efficiency and safety.
4. All **activities are recorded and stored**, providing comprehensive data for review, performance analysis, and continuous improvement.

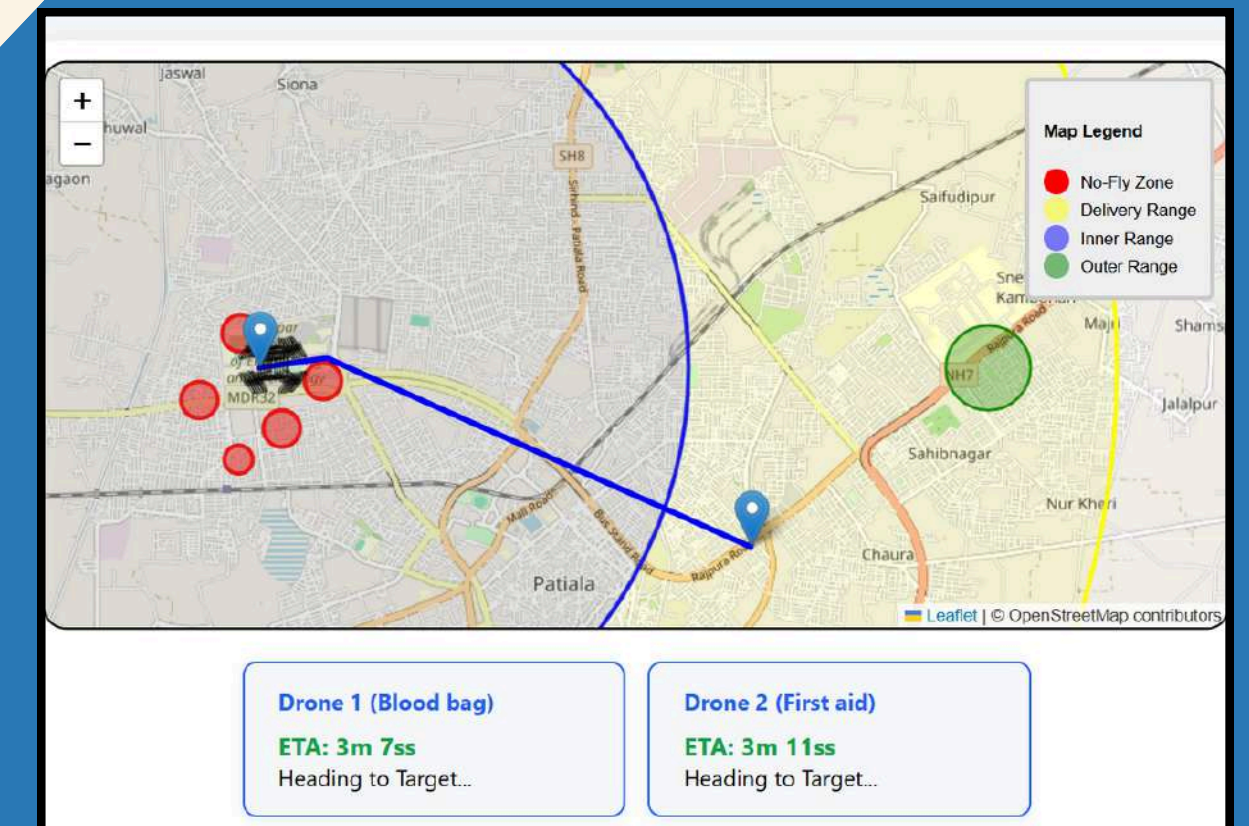
For now, our system is completely virtual (no physical drones).

This serves as a proof of concept and operational blueprint, paving the way for future real-world implementations.

Note: Our system is designed for special, time-sensitive situations that require rapid, urgent deliveries. (no for mass-scale normal deliveries)



Our Website Login Page



Smart Navigation System

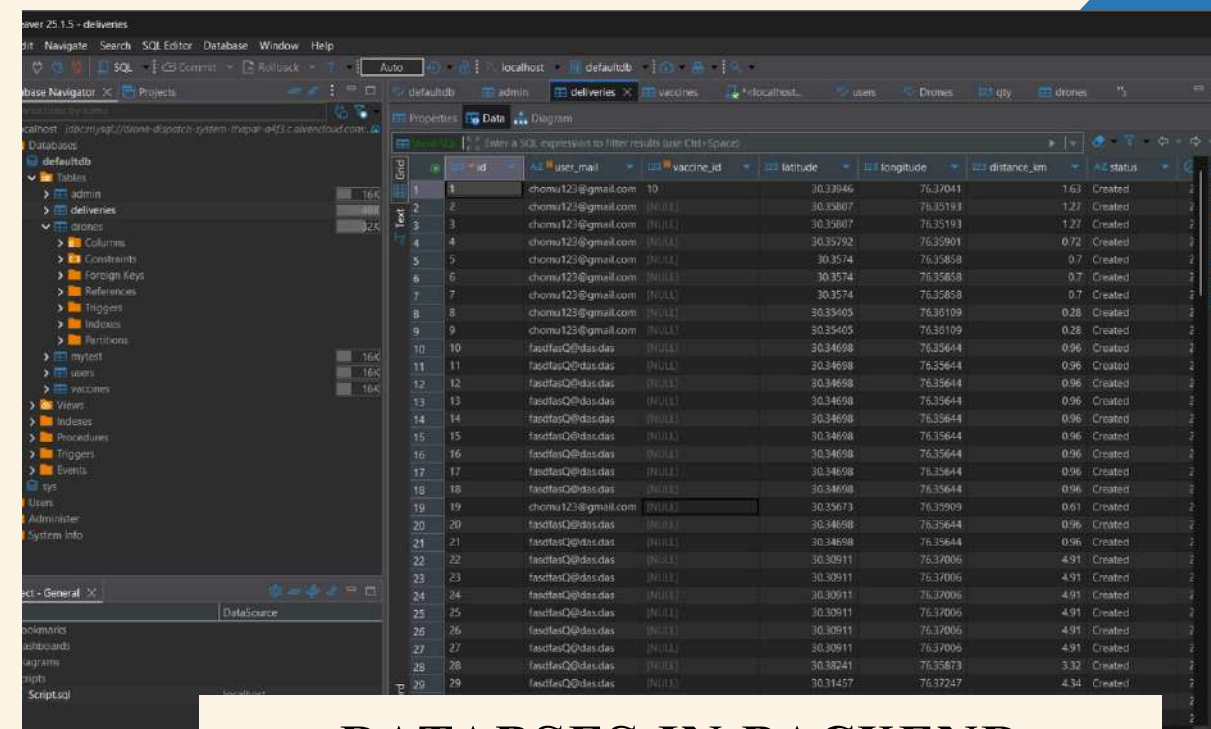
USP OF OUR SOLUTION

1. Secure & Encrypted Dispatch
2. Intelligent Autonomous Navigation System [in-house]
3. Scalable Swarm Coordination [multi-drone delivery]
4. Realistic Virtual Simulation & Testing:
5. Rapid Deployment & Low-Cost Design

Drone Fleet Status

DRONE ID	MODEL	STATUS	BATTERY	LOCATION
DRN-001	MediLift Pro	ACTIVE	87%	Base Station A
DRN-002	CargoDrone X	ACTIVE	64%	En Route
DRN-003	MediLift Pro	MAINTENANCE	0%	Service Bay
DRN-004	RapidDelivery Z	ACTIVE	23%	Hospital District
DRN-005	MediLift Pro	ACTIVE	91%	Base Station B

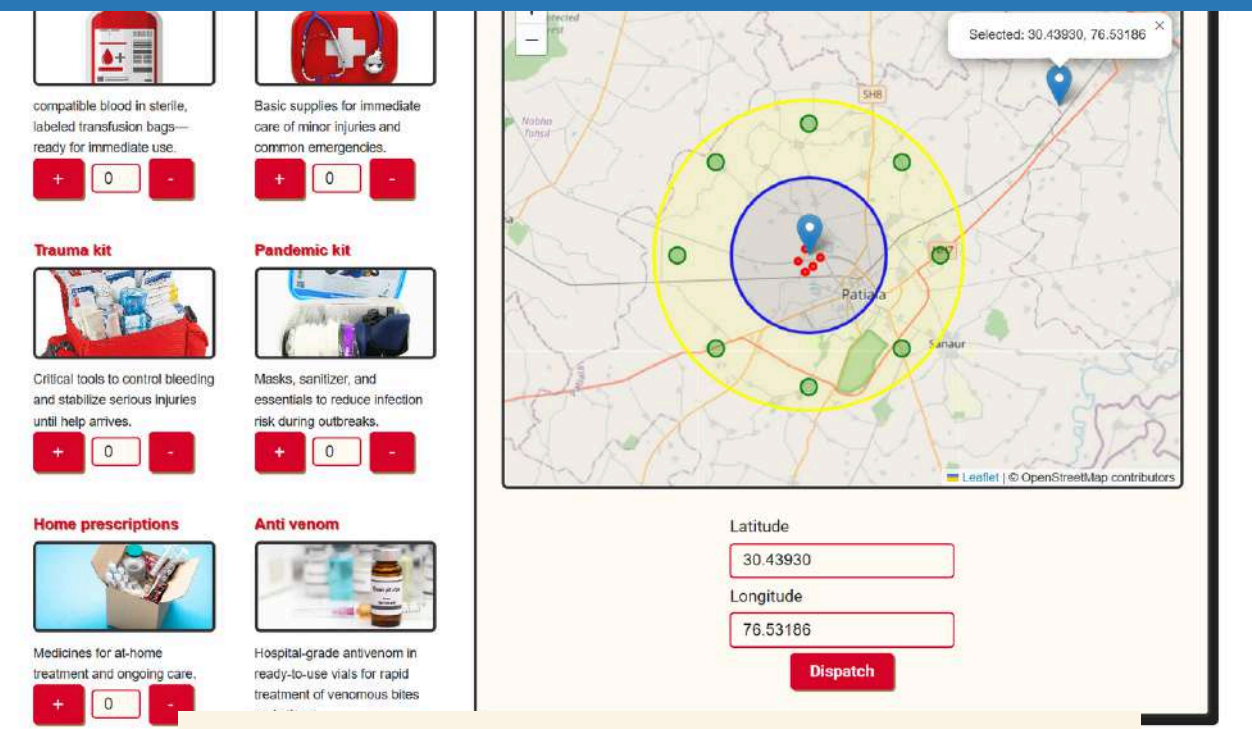
DRONEs



The screenshot shows a database management tool interface with a table containing drone data. The table has columns for id, user_email, vaccine_id, latitude, longitude, distance_km, and status. The data is as follows:

id	user_email	vaccine_id	latitude	longitude	distance_km	status
1	chomu123@gmail.com	10	30.33046	76.37041	1.63	Created
2	chomu123@gmail.com	(NULL)	30.33007	76.35191	1.27	Created
3	chomu123@gmail.com	(NULL)	30.33007	76.35191	1.27	Created
4	chomu123@gmail.com	(NULL)	30.35792	76.35991	0.72	Created
5	chomu123@gmail.com	(NULL)	30.3574	76.35818	0.7	Created
6	chomu123@gmail.com	(NULL)	30.3574	76.35818	0.7	Created
7	chomu123@gmail.com	(NULL)	30.3574	76.35818	0.7	Created
8	chomu123@gmail.com	(NULL)	30.35405	76.35109	0.28	Created
9	chomu123@gmail.com	(NULL)	30.35405	76.35109	0.28	Created
10	faadfasQ@dasdas	(NULL)	30.34698	76.35644	0.96	Created
11	faadfasQ@dasdas	(NULL)	30.34698	76.35644	0.96	Created
12	faadfasQ@dasdas	(NULL)	30.34698	76.35644	0.96	Created
13	faadfasQ@dasdas	(NULL)	30.34698	76.35644	0.96	Created
14	faadfasQ@dasdas	(NULL)	30.34698	76.35644	0.96	Created
15	faadfasQ@dasdas	(NULL)	30.34698	76.35644	0.96	Created
16	faadfasQ@dasdas	(NULL)	30.34698	76.35644	0.96	Created
17	faadfasQ@dasdas	(NULL)	30.34698	76.35644	0.96	Created
18	faadfasQ@dasdas	(NULL)	30.34698	76.35644	0.96	Created
19	chomu123@gmail.com	(NULL)	30.35673	76.35999	0.61	Created
20	faadfasQ@dasdas	(NULL)	30.34698	76.35644	0.96	Created
21	faadfasQ@dasdas	(NULL)	30.34698	76.35644	0.96	Created
22	faadfasQ@dasdas	(NULL)	30.30911	76.37006	4.91	Created
23	faadfasQ@dasdas	(NULL)	30.30911	76.37006	4.91	Created
24	faadfasQ@dasdas	(NULL)	30.30911	76.37006	4.91	Created
25	faadfasQ@dasdas	(NULL)	30.30911	76.37006	4.91	Created
26	faadfasQ@dasdas	(NULL)	30.30911	76.37006	4.91	Created
27	faadfasQ@dasdas	(NULL)	30.30911	76.37006	4.91	Created
28	faadfasQ@dasdas	(NULL)	30.30241	76.35873	3.32	Created
29	faadfasQ@dasdas	(NULL)	30.31457	76.37217	4.34	Created

DATABASES IN BACKEND



The screenshot shows a user request page for drone delivery. It includes a map of Patiala with a selected location at 30.43930, 76.53186. Below the map, there are four categories of items that can be requested: compatible blood in sterile, labeled transfusion bags; Trauma kit; Pandemic kit; Home prescriptions; and Anti venom. Each category has a description and a button to add items to the request.

Compatible blood in sterile, labeled transfusion bags—ready for immediate use.

Trauma kit: Critical tools to control bleeding and stabilize serious injuries until help arrives.

Pandemic kit: Masks, sanitizer, and essentials to reduce infection risk during outbreaks.

Home prescriptions: Medicines for at-home treatment and ongoing care.

Anti venom: Hospital-grade antivenom in ready-to-use vials for rapid treatment of venomous bites.

Latitude: 30.43930
Longitude: 76.53186
Dispatch

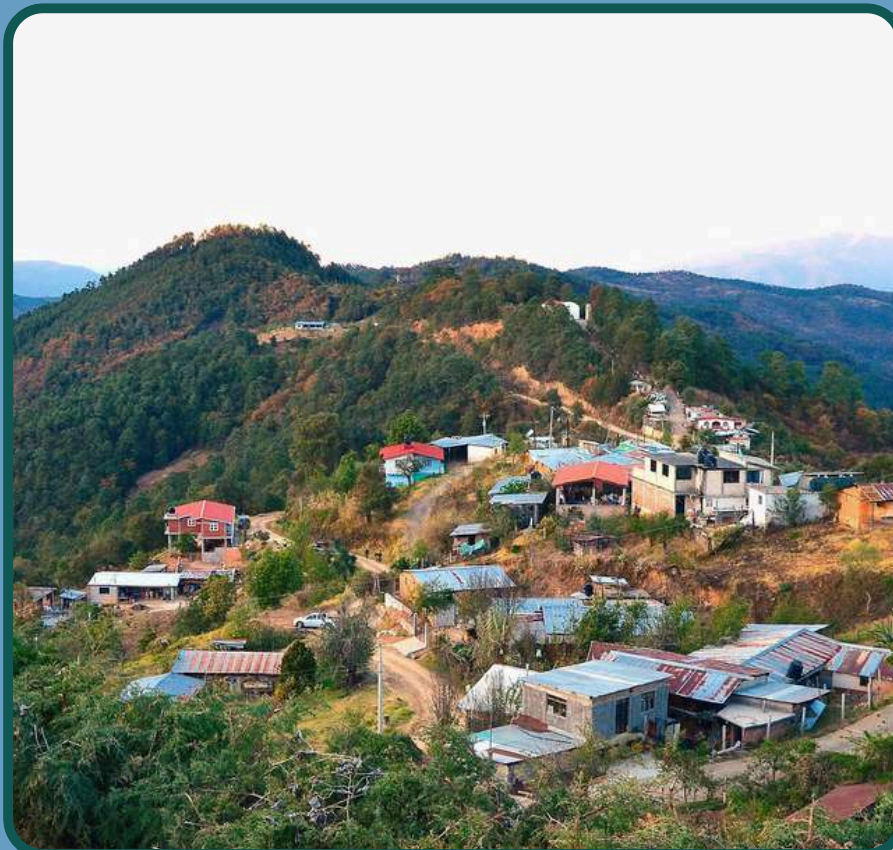
USER REQUEST PAGE



Safer Outdoor Activities



On-Time Medical Supply



**Intra-Hill
Rapid Delivery**



**Emergency Responders At
Accident Sites**

Target Audience

Who will benefit from this project?

- Hospitals in crisis/time-critical situations where medicine delivery takes priority
- Remotely located patients, and in cases of traffic-induced delays
- Remote and rural communities with limited access to timely medical care
- Critical medical aid for hikers and trekkers
- Emergency responders who require quick access to critical medical items on-site.
- Public health agencies and NGOs working in disaster and epidemic response.

TECHNOLOGY STACK



Aiven Cloud

[Database]



Flask

Flask

[Backend]



Leaflet JS

[Map API]



HTML, CSS & JS

[Frontend]

Business Model

Revenue Streams

Government Subsidies
and Seed Funding

Direct Emergency
Services Revenue

Private and Public
Hospitals and Clinics

Civilian Non-
Medical Deliveries

- We will combine **multiple revenue streams** for sustainable growth.
- We will partner with private and public hospitals and clinics to service recurring **medical deliveries through contracts or subscriptions.**
- Initial deployment is supported by government subsidies and seed funding to cover early costs.
- In emergencies like epidemics or wars, we offer **government-paid critical delivery services (per-delivery).**
- After validation, we plan to **expand into civilian markets** by partnering with **retail delivery services** (like Blinkit, Zomato etc.) for non-medical items.
- Additionally, we license our tested system to other operators, creating a steady income source

IMPACT ASSESSMENT

Faster Emergency Response

Quickly delivers essential medical supplies to remote or disaster-affected areas, saving lives.

Increased Healthcare Reach

Enables hospitals to serve underserved and hard-to-reach communities effectively.

Cost Savings

Virtual first development and optimized routes reduce expenses compared to traditional delivery methods.

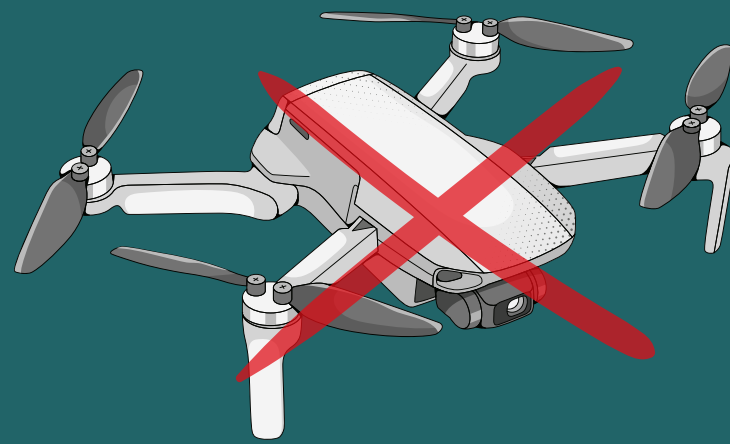
Operational Efficiency

Streamlines delivery workflows and resource use for faster, more reliable emergency logistics.



Challenges & their Mitigation

Regulations



We will comply with policies and aviation authorities to develop clear, unified regulatory frameworks and establish safety standards for BVLOS operations and controlled airspace use.

Sustainability



We will have to rely on financial planning, diverse revenue sources, and smart deployment location selection and cost allocation, supported by strategic partnerships.

Safety



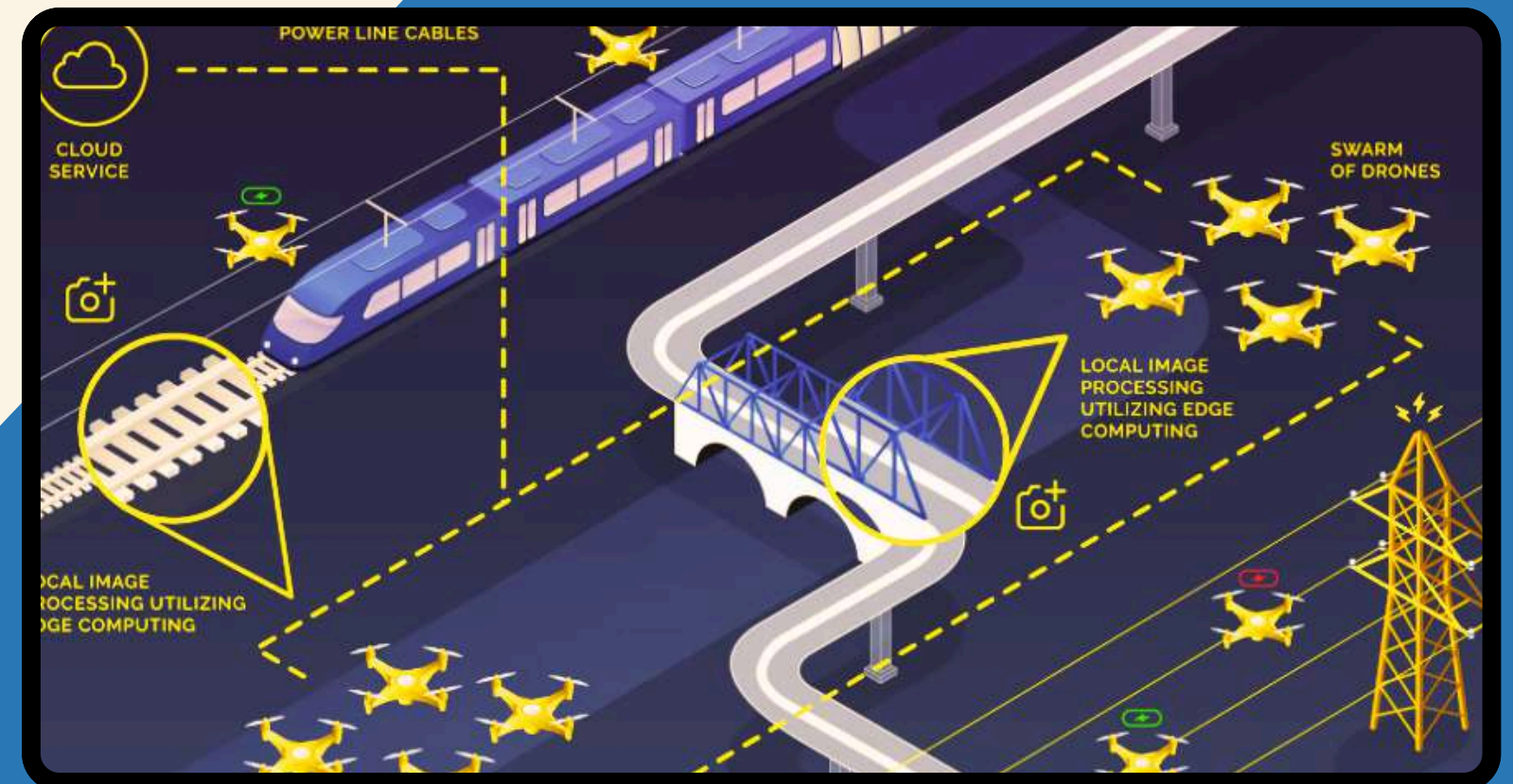
We will ensure safety through robust operational protocols, risk assessment, real-time monitoring, and fail-safe mechanisms, and adherence to regulatory standards.

Future Roadmap

- **Strategic Hospital Partnerships:** Collaborating with hospitals such as REUS Hospital can provide real-world impact and valuable operational insights.
- **Computer Vision Integration:** Leveraging computer vision enables advanced features such as safer landing, payload recognition, and enhanced navigation.
- **Real-World Drone Deployment:** Integrating physical drone hardware allows the transition from virtual simulation to actual operational delivery systems.



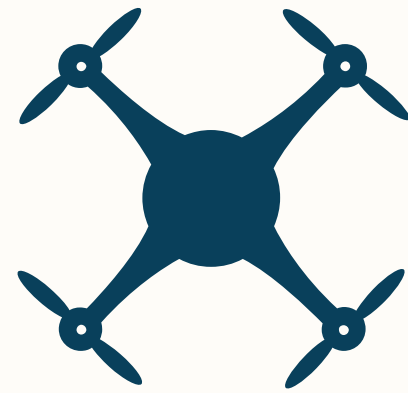
Sensor Equipped Drones For Smarter Navigation



Inter Drone Communication And Delivery Operation

Team : Drone Developers

Drone
Dispatch
System



Thank You.

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(T080)

Thapar Institute of Engineering and
Technology



Lakshita

AI/ML Implementation
lakshitaaggarwal2411@gm
ail.com



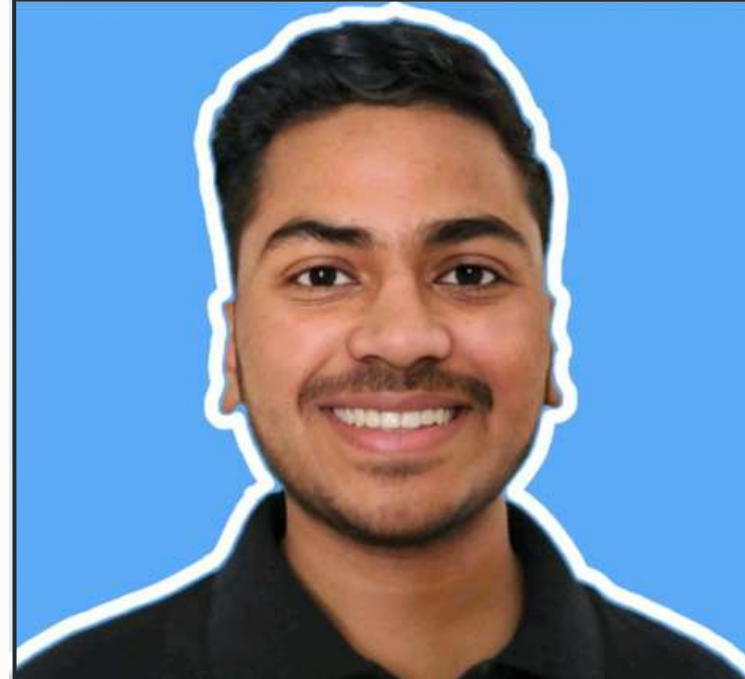
Lahari

Frontend (UI/UX)
bomminenilahari@gmail.com



Kaamya

Idea and DevOps
kmathpaLbe24@thapar.edu



Kamesh

Website Backend
yadavkamesh91@gmail.com



Aryan

Website Backend
aryanawasthi017@gmail.com



Abhinab

Drone Logic & Visualization
abhinab2k05@gmail.com