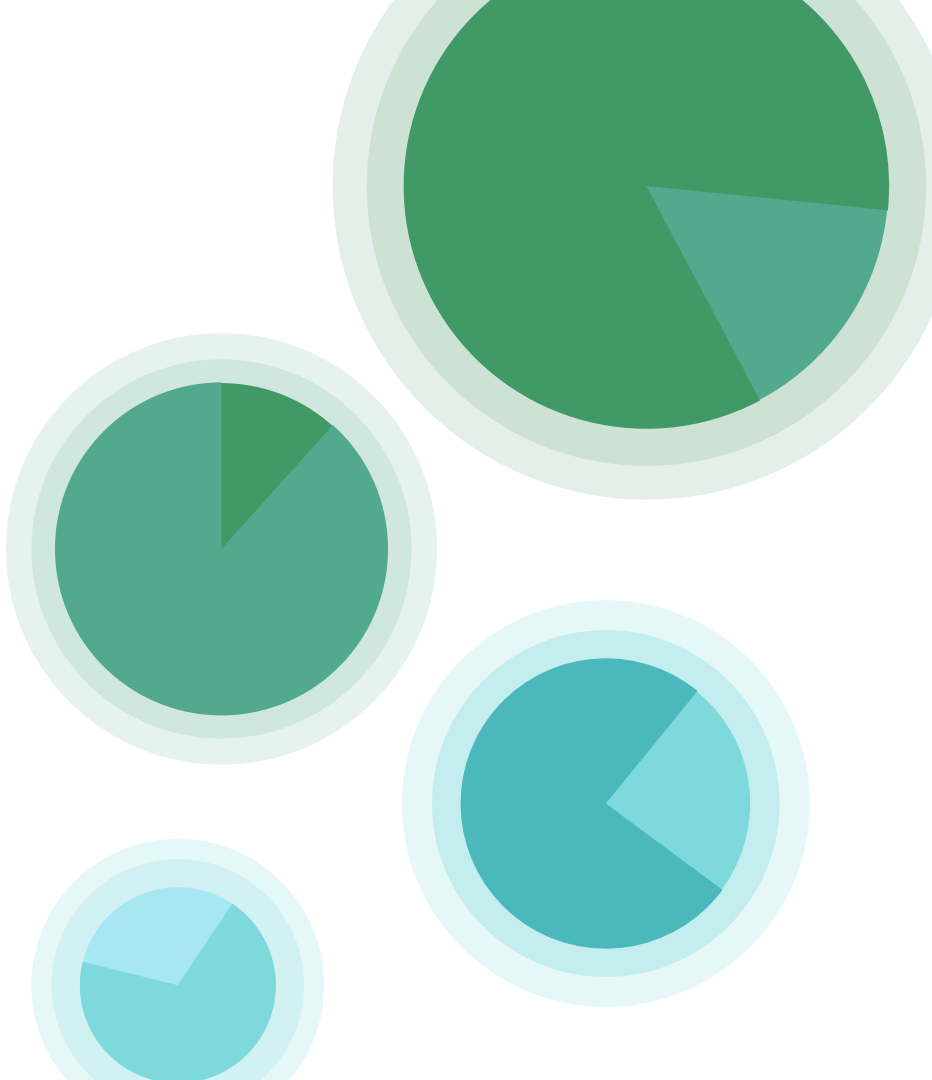
AI-Driven Drone Detection and Tracking

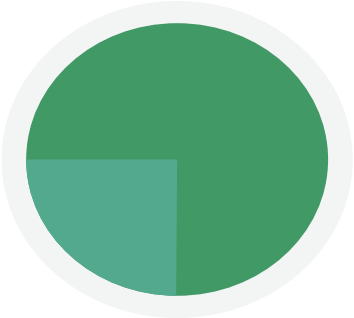
BY,

Ismail Suleiman
Koushik G
Lokesh V
Phaneendra Chandu
Rajeev M
Venkatesh N P S



Types of Prototypes

AI-Driven Drone Detection and Tracking Project: the distribution of effort among low-fidelity, mid-fidelity, and high-fidelity prototypes will depend on the complexity of the project and the stage of development.

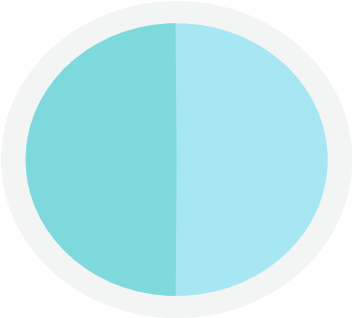


20 %

Low-Fidelity Prototypes

40 %

Mid-Fidelity Prototypes



40 %

High-Fidelity Prototypes

Process Percentage Distribution

Low-Fidelity Prototypes - 20%

• Focus: Early brainstorming, exploring ideas, and understanding system flow.

•Reason: These prototypes help establish the foundation, but minimal time is spent as they are rough sketches or wireframes.

Mid-Fidelity Prototypes - 40%

•Focus: Testing specific features, refining the workflow, and evaluating the integration of AI models for detection and tracking.

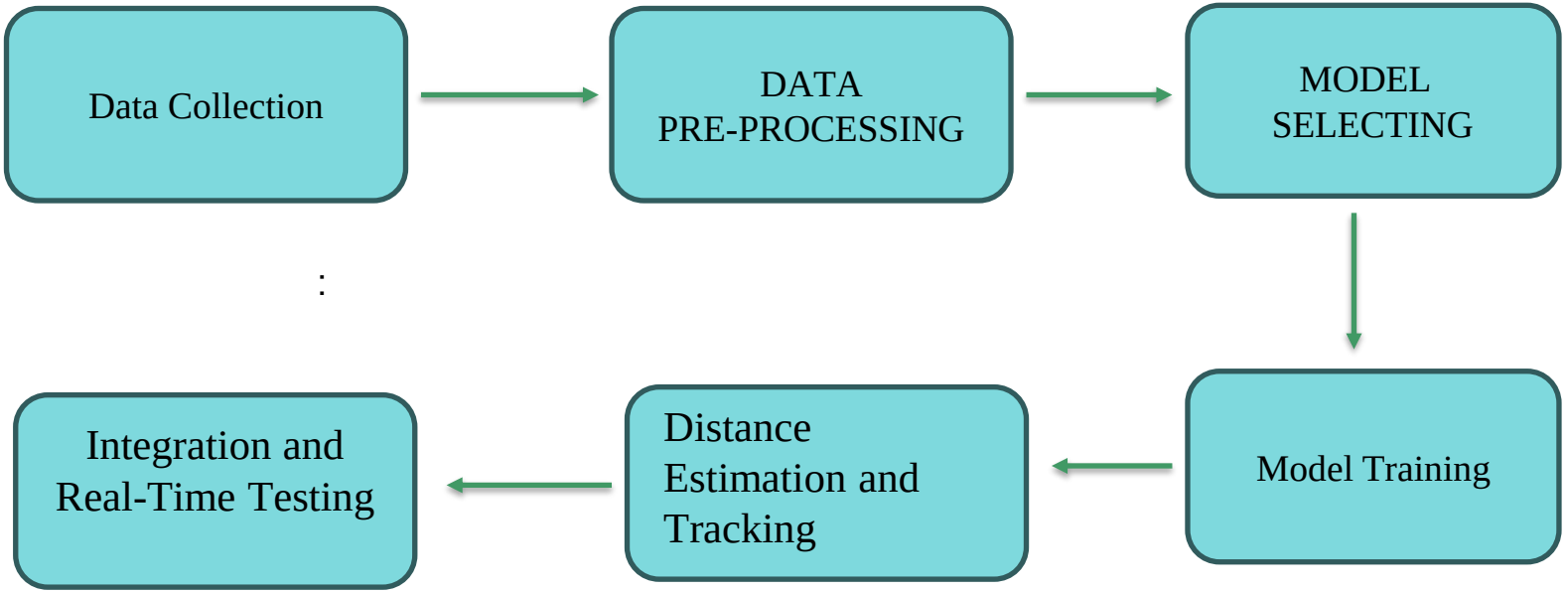
•Reason: This stage is critical to ensure the system's key functionalities (e.g., drone detection algorithms, user flow, and basic interaction) work as expected. More time is allocated here to validate technical feasibility.

High-Fidelity Prototypes - 40%

•Focus: Finalizing details, testing real-time scenarios, and presenting the system to stakeholders.

•Reason: The high-fidelity stage is essential for creating a realistic, functional prototype that closely resembles the final product. This ensures usability, system performance, and stakeholder buy-in.

Workflow


Data Collection
DATA PRE-PROCESSING
MODEL SELECTING
:
Integration and Real-Time Testing
Distance Estimation and Tracking
Model Training

PROPOSED WORK

Data Collection

Collect drone images with varying distances and angles.

Ensure dataset includes different drone sizes and shapes.

Preprocessing

Resize, standardize, and augment images for uniformity.

Annotate drones in images with bounding boxes.

Model Training

Use deep learning models like Xception and VGG16 compare.

Train models to detect and track drones accurately.

Distance Estimation and Tracking:

Calculate drone distance using image scaling techniques.

Track drone movement with real-time video analysis.

Integration and Real-Time Testing:

Integrate the model with tracking hardware systems.

Test the system under real-world environmental conditions.


thank
you

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- Select one of the parts and **ungroup** it by right-clicking and choosing “Ungroup”.
- **Change the color** by clicking on the paint bucket.
- Then **resize** the element by clicking and dragging one of the square-shaped points of its bounding box (the cursor should look like a double-headed arrow). Remember to hold Shift while dragging to keep the proportions.
- **Group** the elements again by selecting them, right-clicking and choosing “Group”.
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