PROBLEM AND CLIENT

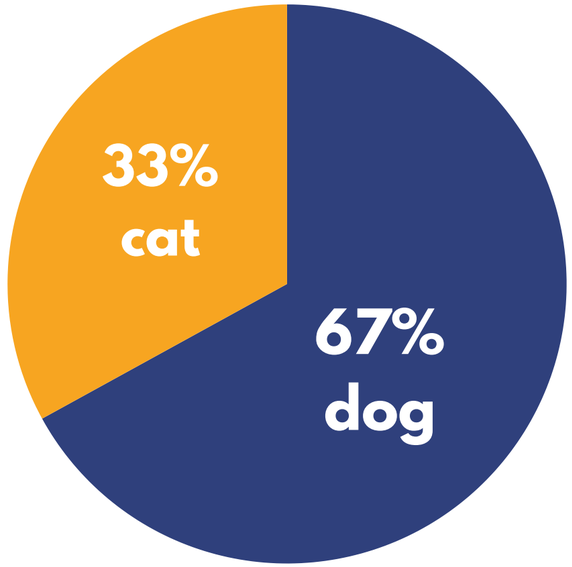
BARANGAY SACRED HEART AND ANIMAL POUND

Ms. Francesca Camille Malig-David

Barangay Chairman

Problem/s Encountered by the Client

Limitation of accurately determining the location of roaming stray animal and community animal control using traditional reporting such as **text messages**, **phone calls**, and **rotation of animal control team.**



Detailed Research and Statistics

The Philippines faces a significant public health issue with **12 million stray animals** contributing to rabies transmission and other health risks (DOH 2024).

DESIGN OF STRAY DETECTION FOR SMART BARANGAY ANIMAL CONTROL USING DEEP LEARNING

Engr. Roman Richard
Team Adviser

MACAN, John Christian
System Administration

CRUZ, Daniel
System Administration

TEAM LEADER
CUEVAS, Christian Jay
Intellegent System

DELA CRUZ, Alexander
Data Science

FLORES, Justine
System Administration

PROJECT OBJECTIVES

- Design of a system that:
  - Detects animals such as **Dogs and Cats**.
  - Classify them if stray or not stray based on **collar or leash**.
  - **Pins the location** of the detected stray animals on a map and **notifies** the animal pound.
- Develop a **web** and **mobile based system** that displays the detected stray
- **Test** and **evaluate** the accuracy of the system.

CONSTRAINTS

SAFETY	PRECISION
EFFICIENCY	STORAGE CONSUMPTION
PERFORMANCE	INFERENCE TIME
MANUFACTURABILITY	TRAINNG TIME
COMPATIBILITY	MAINTAINABILITY INDEX SCORE

GENERAL SYSTEM ARCHITECTURE

INPUT

CCTV Footage

PROCESS

Video Feed Scaling, and Preprocessing

Object Detection Model for Stray Animal Identification

Location Tagging

OUTPUT

Notification and Dashboard Updates

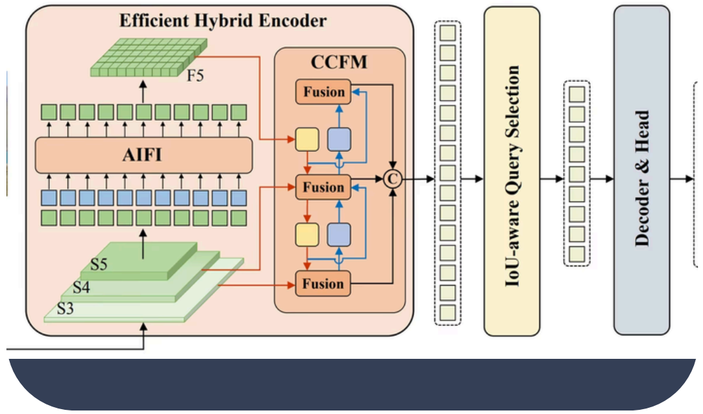
Location Updates

Detected Stray Animal

DESIGN RATIONALE

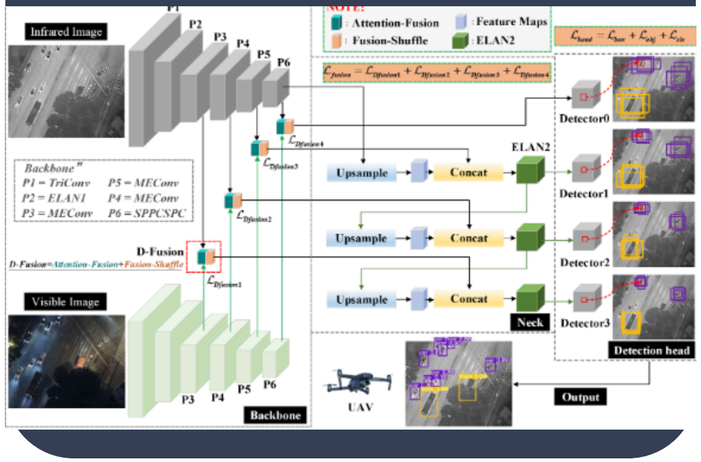
DESIGN 01

RT-DETR



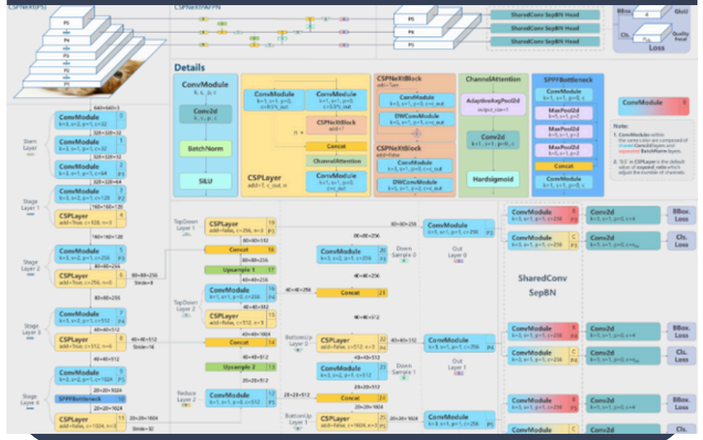
DESIGN 02

YOLO v8



DESIGN 03

RTMDet



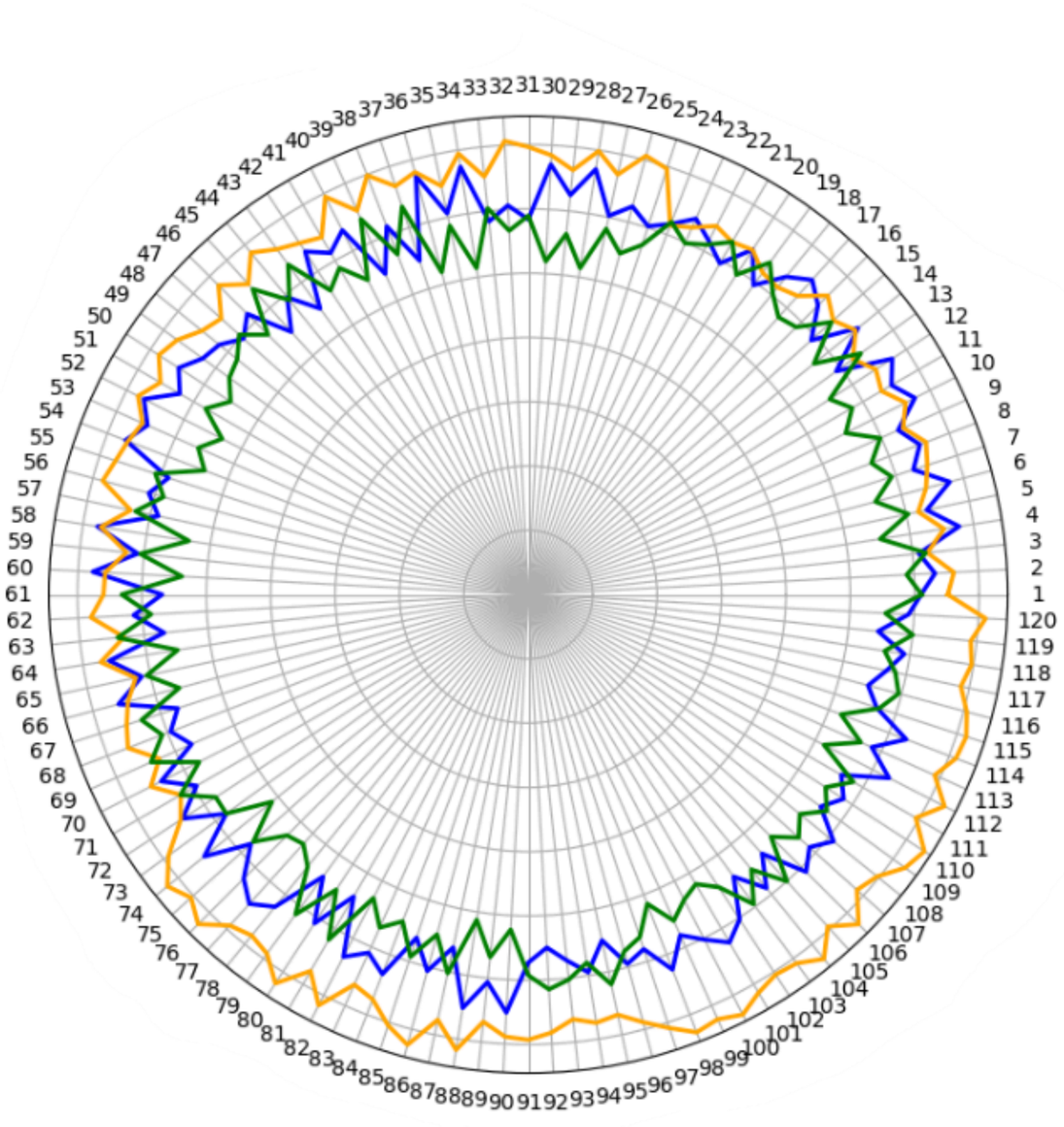
TRADE-OFFS ANALYSIS (RAW VALUES)

CONSTRAINTS	PREFERENCE	IMPORTANCE (RAW)	IMPORTANCE (%)	DESIGN 1	DESIGN 2	DESIGN 3
SAFETY (precision)	**MAXIMIZATION**	**10**	**25.00%**	**96%**	**91.70%**	**95.43%**
EFFICIENCY (storage consumption)	**MINIMIZATION**	**8**	**20.00%**	**64,601 KB**	**50,796 KB**	**133.491 KB**
PERFORMANCE (inference time)	**MINIMIZATION**	**9**	**22.50%**	**28.21 ms**	**12.51 ms**	**15.7 ms**
MANUFACTURABILITY (training time)	**MINIMIZATION**	**7**	**17.50%**	**13.119 hrs**	**8.7 hrs**	**1.12 hrs**
COMPATIBILITY (maintainability index score)	**MAXIMIZATION**	**6**	**15.50%**	**60.23**	**59.33**	**55.18**

TRADE-OFFS ANALYSIS (NORMALIZED VALUES)

DESIGNS	CONSTRAINTS				
	Safety (Precision)	Efficiency (Storage Consumption)	Performance (Inference Time)	Manufacturability (Training Time)	Compatibility (Maintainability Index)
Design 1: Real-Time Detection Transformer	10.0000	8.4976	1.0000	1.0000	10.0000
Design 2: YOLOv8	1.0000	10.0000	10.000	4.3145	8.3960
Design 3: RTMDet	8.8041	1.0000	8.035	10.000	1.000

SENSITIVITY ANALYSIS



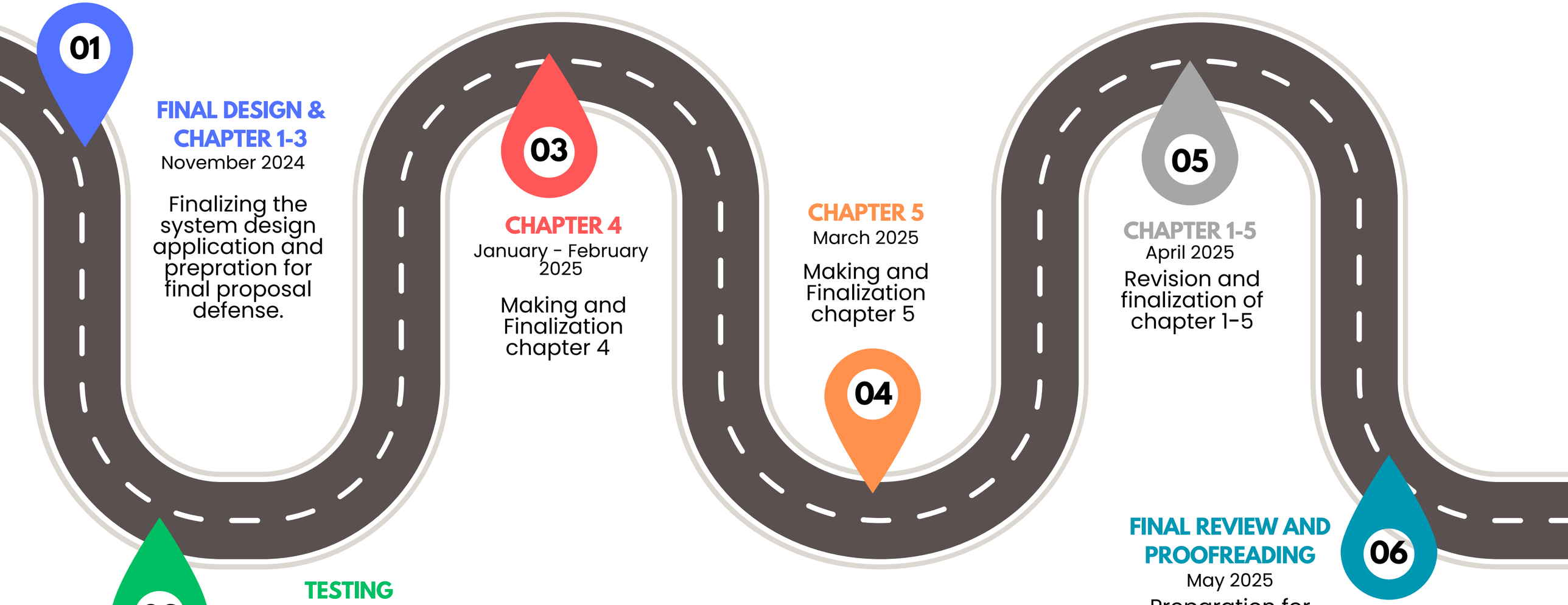
DESIGN 1 - RT-DETR

DESIGN 2 - YOLOV8

DESIGN 3 - RMTDET

The result indicates that **design 2 (YOLOv8)** is the most effective and winning design.

IMPLEMENTATION PLAN & TIMELINE



FINAL DESIGN & CHAPTER 1-3
November 2024

Finalizing the system design application and prepration for final proposal defense.

TESTING
November - December 2024
Conducting actual testing and evaluation of system

CHAPTER 4
January - February 2025

Making and Finalization chapter 4

CHAPTER 5
March 2025

Making and Finalization chapter 5

CHAPTER 1-5
April 2025
Revision and finalization of chapter 1-5

FINAL REVIEW AND PROOFREADING
May 2025
Preparation for technical and final defense

AND THAT'S A WRAP!

THANK YOU