Basic Details & Problem Statement

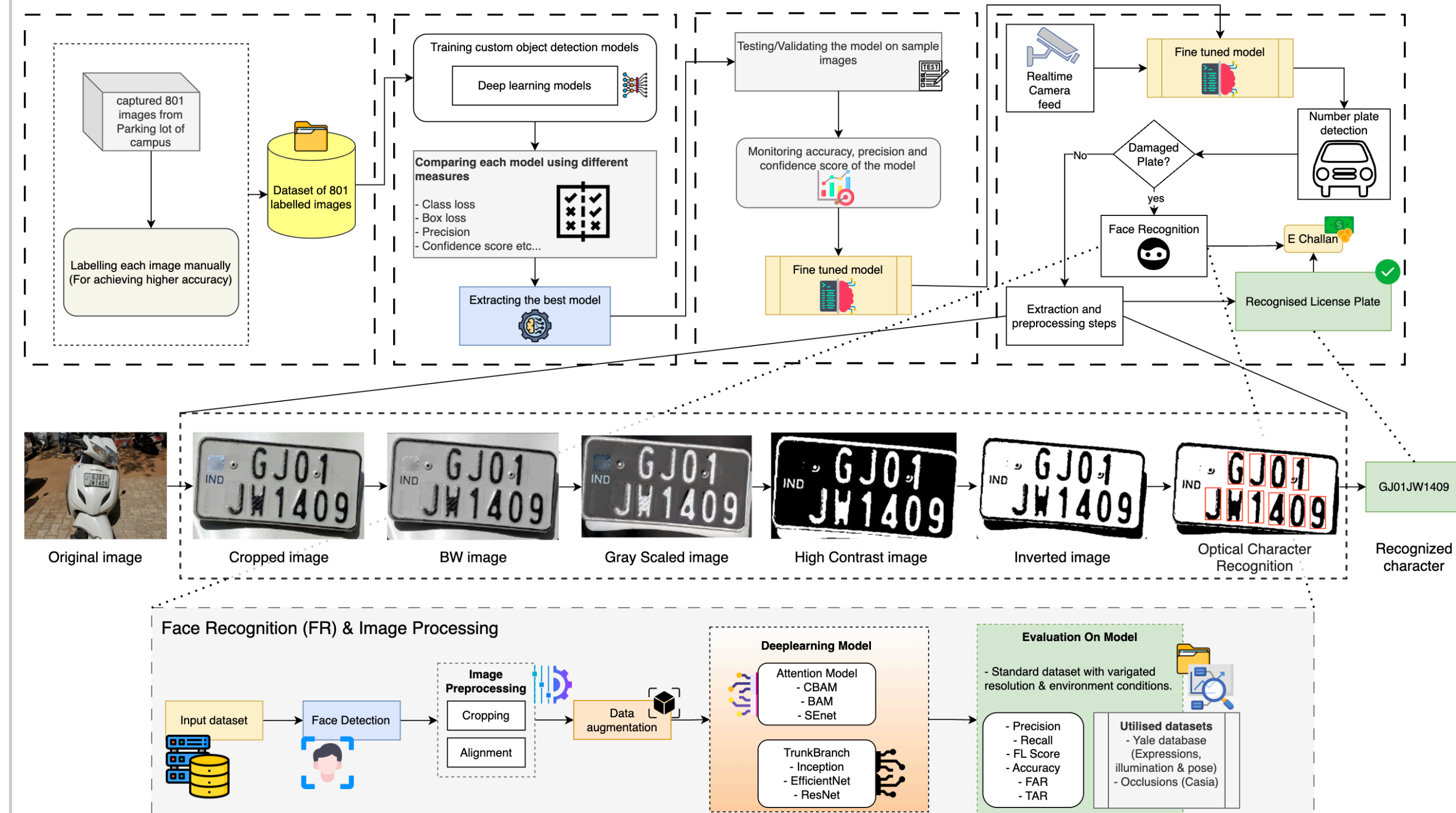|	
PS ID	KVH-005
Problem Statement Title	Advanced ANPR & FRS solution
Team Name	Coding Brigades
Team Leader Name	Dhruvkumar Rakeshbhai Patel
Institute Code (AISHE)	C-322
Institute Name	030 L.D.R.P. INSTITUTE OF TECH. & RESEARCH., GANDHINAGAR

Idea/Approach Details

Idea solution

- Develop a **deep learning model** for ANPR and facial recognition

- Train the model on a **large dataset** of diverse number plates and faces

- Implement a pre-processing module to **enhance image quality**

- Utilise character segmentation techniques for accurate plate recognition

- Use **advanced feature extraction** for facial recognition

- Develop an intuitive user interface for easy operation

- Implement **real-time processing** for quick response

Prototype

- Trained deep learning network using **transfer learning**

- Implemented OCR engine for **number plate segmentation and text extraction**, handling non-standard plates

- Combined face recognition and OCR for accurate recognition in real-time CCTV feeds

Tech stack

Python: High-level programming language

OCR: For text extraction from number plates

Deep learning: Used for feature extraction in face recognition

Neural networks with transfer learning: Deep learning technique used for feature extraction on images

Transformer: Sequential data processing on the images
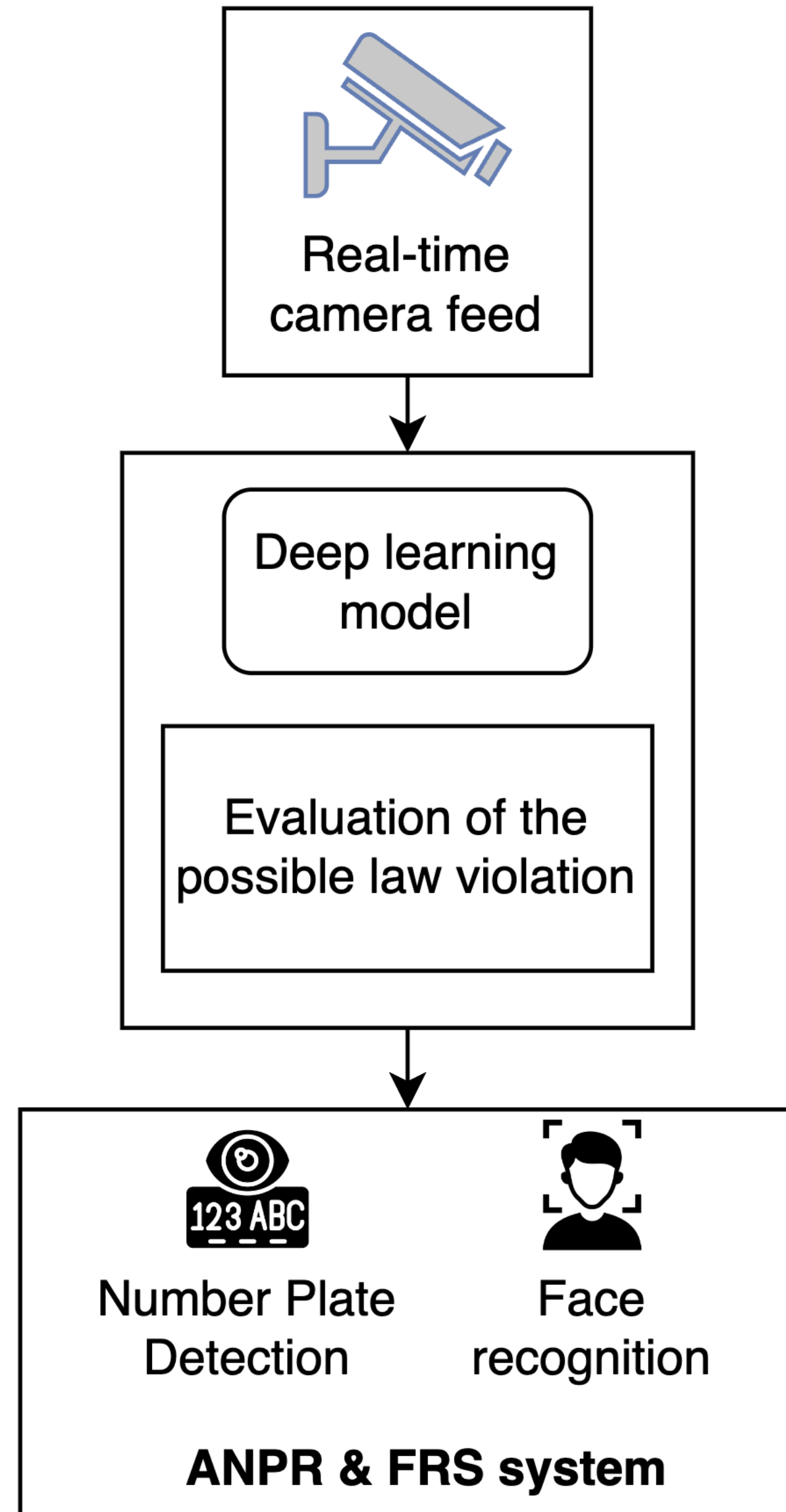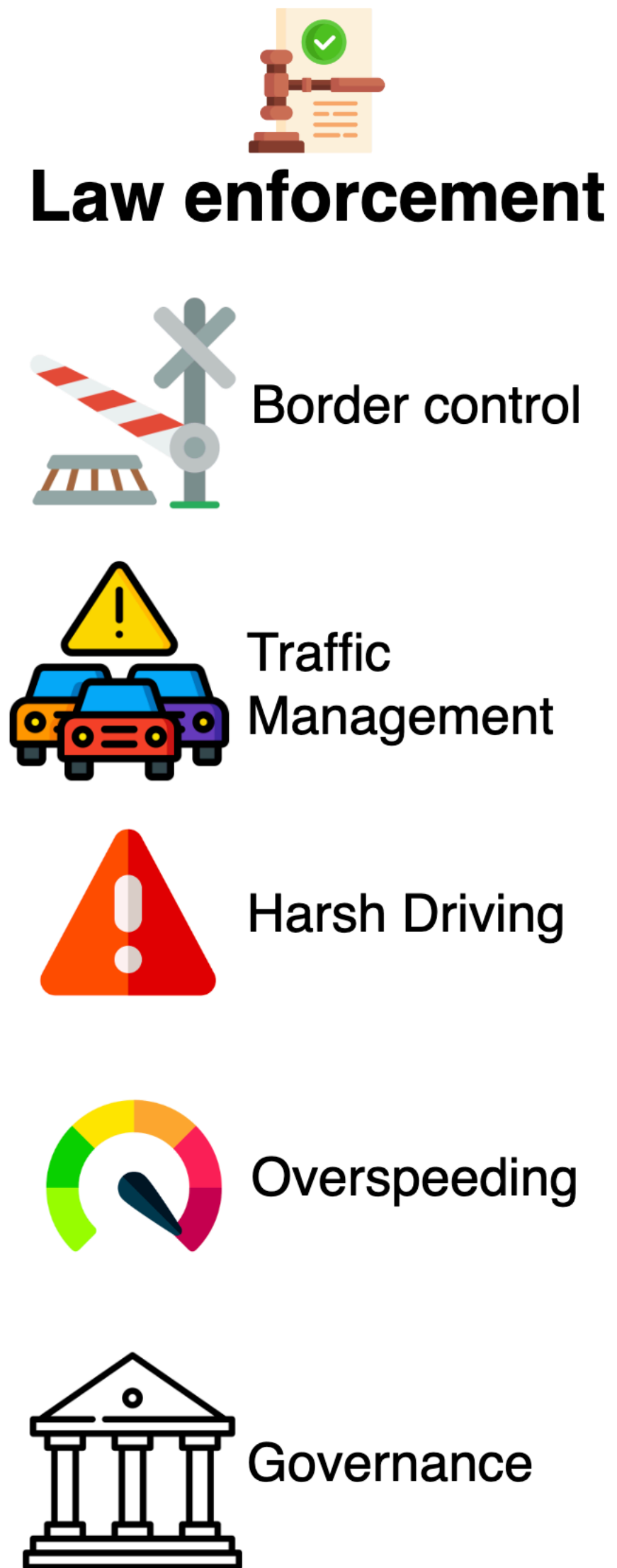
BERT, RoBERTa, Transformer-XL

Encoder: Stack of the identical layers used for –
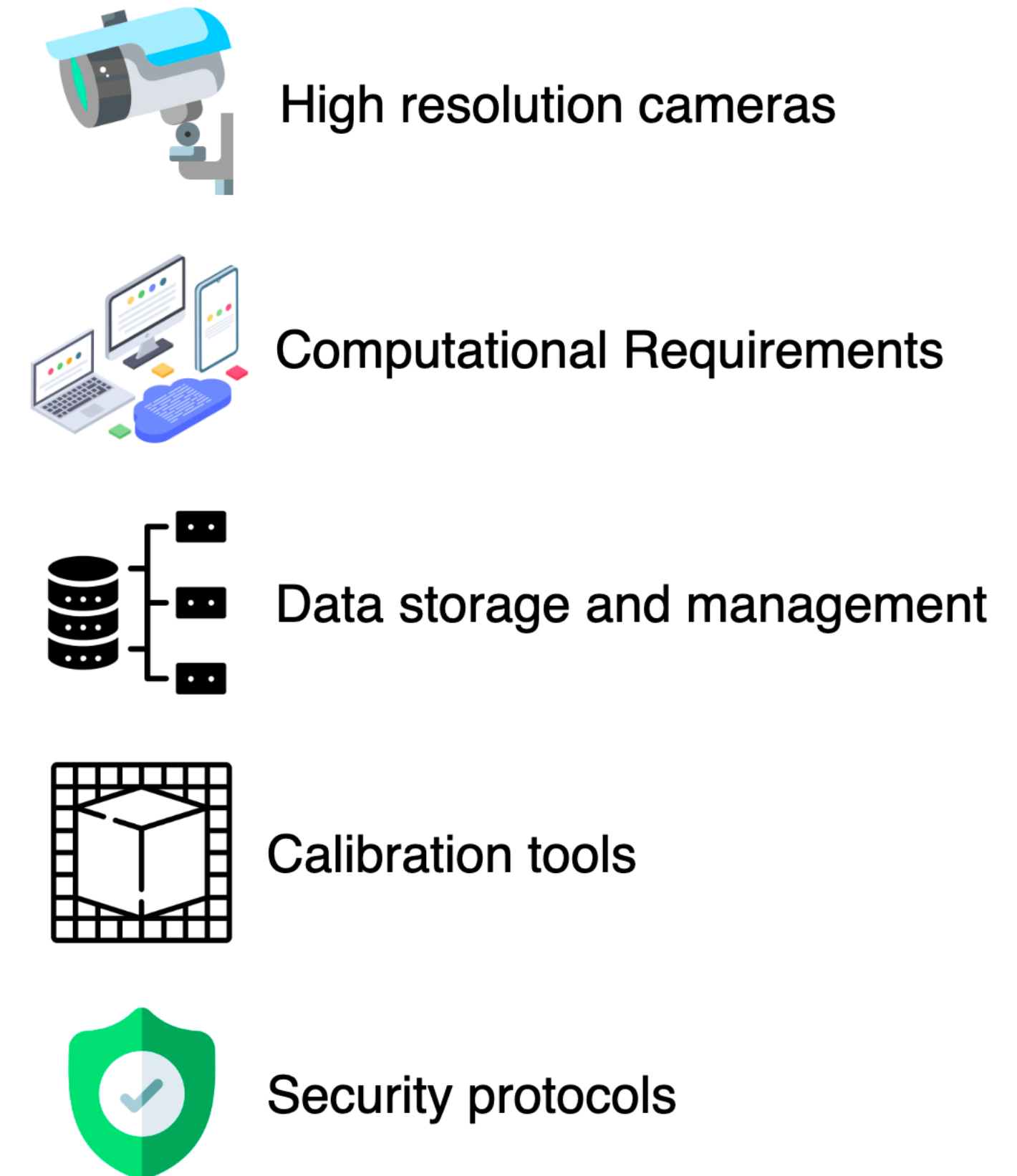1. Self attention 2. Feed-forward NN

Decoder: Takes Encoder's output and generates the output sequence

Use cases

Law enforcement

Border control

Traffic Management

Harsh Driving

Overspeeding

Governance

Real-time camera feed

Deep learning model

Evaluation of the possible law violation

Number Plate Detection

Face recognition

ANPR & FRS system

Dependencies

High resolution cameras

Computational Requirements

Data storage and management

Calibration tools

Security protocols

Team Details

Sr. No.	Name of the Team Member	Branch	Stream	Year	Position/Role in team
1	Dhruvkumar Rakeshbhai Patel	B.Tech	Information Tech.	3rd Year	Team Leader
2	Kovil Hasmukhbhai Savaj	B.Tech	Information Tech.	3rd Year	Front End
3	Malani Prince Hiteshbhai	B.Tech	Information Tech.	3rd Year	Machine Learning
4	Patel Jay Ravindrakumar	B.Tech	Information Tech.	3rd Year	Backend
5	Krutika Vijaybhai Patel	B.Tech	Information Tech.	1st Year	Database Management
6	Nancy Rajesh Patel	B.Tech	Information Tech.	1st Year	Database Management

Team Mentor/s Details

Sr. No.	Name of mentor	Category	Expertise	Domain Experience
1	Prof. Himani Trivedi	Academic	ML, Deep Learning	6+ years