

Computer Vision and AI Club

RESEARCH PROPOSAL PRESENTATION

SMART BUS MONITORING SYSTEM USING AI AND COMPUTER VISION

A Real-Time Passenger Detection and Monitoring Solution

07 June, 2025

HELLO!

Warm greetings to all present.

As members of the AI and Computer Vision Club, we are thrilled to introduce our project proposal for a Smart City Bus Monitoring System. This initiative addresses real-world transportation challenges through advanced technology and aims to create tangible social impact—especially in urban mobility and public service efficiency.

Computer Vision and AI Club

■ AGENDA OVERVIEW

01

WHAT IT IS?

02

WHY WE DO THIS?

03

WHAT DO WE DO FOR?

04

WHO IS OUR PARTNER?

05

THE PROCESS

06

TECHNOLOGY STACK

07

JOIN US



A photograph showing a close-up of a person's hands typing on a silver laptop keyboard. The hands belong to a person wearing a white shirt and a gold ring. The background is blurred, showing what appears to be a classroom or office environment.

WHAT IT IS?

- An AI-based system installed on city buses to:
 - Detect and count passengers in real time.
 - Monitor driver presence and activity.
 - Optionally, track bus occupancy for data analytics.
- Future extension: integrate with smart card ID system for students/passengers.



WHY DO WE DO THIS?

01

Public transport in Cambodia
lacks real-time data.

02

Overcrowding, inefficient
routing, and lack of monitoring
cause inconvenience.

03

Bus companies and city
authorities need better
analytics to improve service.

04

Supports future smart city
initiatives and student
transportation management.

WHAT DO WE DO FOR?

PARTNERSHIP

CITY BUS OPERATORS & AUTHORITIES

- Optimize Bus Fleet Usage
- Improve Safety & Service Quality
- Generate Usage Reports for Planning

UNIVERSITIES & STUDENT TRANSPORT SERVICES

- Track Student Bus Usage Automatically
- Ensure Fair Access and Safety
- Support Smart Campus Initiatives

URBAN PLANNERS & SMART CITY DEVELOPERS

- Provide Valuable Transit Data
- Support Sustainable Transport Goals
- Enable Integration with Broader Smart Systems



WHO IS OUR PARTNER?

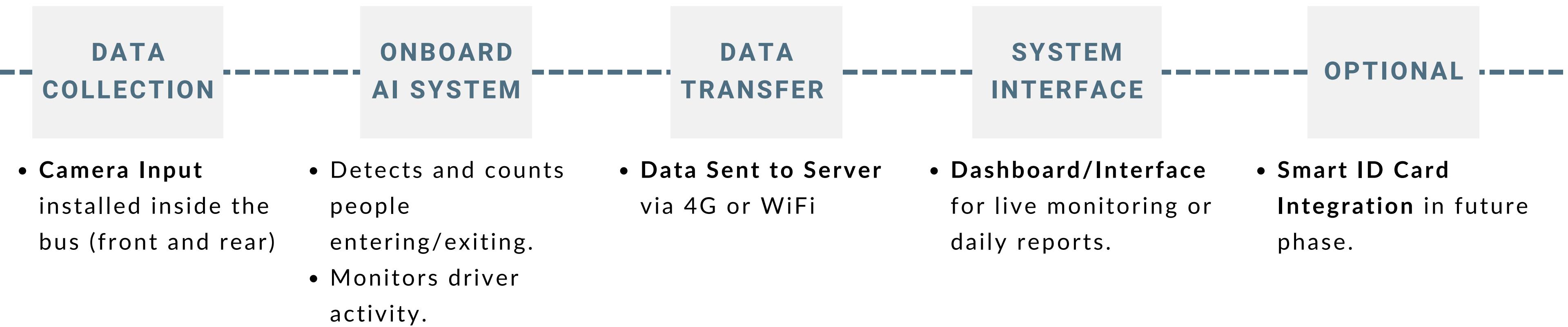
WE AIM TO COLLABORATE WITH:

- City Bus Operators in Phnom Penh (Phnom Penh City Bus)

IN THE FUTURE, WE AIM TO COLLABORATE WITH:

- Ministry of Public Work and Transports
- Phnom Penh Capital Hall

THE PROCESS



TECHNOLOGY STACK

SOFTWARE

- **Object detection models** (YOLOv8 or custom CNN)
- **Real-time video processing**
- **Backend:** Python / Node.js server
- **Dashboard:** Web-based UI (React, Vue, or Django Admin)

HARDWARE

Low-cost cameras, Raspberry Pi / Jetson Nano / Rock Pi



AI/ML DEVELOPERS
training people detection
models



HARDWARE BUILDERS
camera setup, device
integration



BACKEND DEVELOPERS
data pipeline, server



UI/UX DEVELOPERS
dashboard and app

JOIN US

Computer Vision and AI Club

THANK YOU

07 June, 2025