

National University of Computer & Emerging Sciences
Karachi Campus



People Counting System

Project Proposal

Deep Learning

Section: H

Group Members:
21k-3286 Hassan Abbas

- **Introduction**

The project aims to develop an AI-powered people counter system. This system will utilize computer vision techniques to automatically track and count individuals entering and exiting a designated area. The data will be displayed in real-time and potentially stored for further analysis. The primary objective is to provide an efficient and reliable solution for monitoring foot traffic in various environments, such as retail stores, public venues (stadiums, airport, etc.), and transportation hubs.

- **Existing System**

There are various existing people counting systems available. Some employ manual clickers, thermal imaging, or infrared sensors. However, these methods have limitations:

- Manual clickers: Prone to human error and require constant attention.
- Thermal imaging: Expensive and may raise privacy concerns.
- Infrared sensors: Can be inaccurate in crowded areas and struggle to differentiate between people and objects.

- **Problem Statement**

Existing systems often lack accuracy, require manual intervention, or raise privacy concerns. This project aims to address these issues by proposing an AI-powered people counter with the following features:

- High accuracy: Utilizes computer vision for precise people detection and counting.
- Automated: Operates without manual intervention, freeing up human resources.
- Privacy-focused: Processes data anonymously, focusing on head or body count without facial recognition.

- **Proposed Solution**

It will leverage both deep learning algorithms and computer vision techniques for person detection and tracking. By integrating advanced methods such as convolutional neural networks (CNNs) and object tracking algorithms, the system will accurately count individuals even in challenging scenarios. Training on image datasets containing people will facilitate movement detection, enabling the system to increment or decrement the counter as individuals enter or exit the designated area.

- **Salient Features**

- Real-time people counting: Displays the current number of people in the area.
- Data visualization: Presents information in a user-friendly format (e.g., charts, graphs).
- Potential data storage: Allows for historical data analysis (e.g., peak traffic times).
- Privacy-preserving: Anonymously tracks people without facial recognition.
- User-friendly web-based interface for configuration and monitoring.

- **Tools & Technologies**

- Programming Languages: Python
 - Framework: OpenCV
 - Operating System: Windows
 - Web-based interface: HTML, CSS, JavaScript
 - Hardware: GPU for accelerated processing
-