LOCATION TRACKING AND PASSENGER COUNT SYSTEM FOR MASS TRANSIT VEHICLES

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Purpose
Implementing a location tracking and passenger counting system for transit companies to track real-time passenger counts and locations amidst COVID19 pandemic

Conclusions
Given COVID19 limitations, individual domains of the project were tested and validated independently; further integration testing would be ideal

Design
- Component Selection
  - Raspberry Pi [1]
  - Python used as modular language
  - Camera module [2]
  - GPS module [3]
  - Wifi module [3]
- Computer Vision Layer
  - Detects passenger boarding or exiting vehicle
- Application Layer
  - Processes count and location data for user configuration
  - Provides API for device configurations
  - User interface available via Chrome browser
- Network Layer
  - Communication between system and dispatch

Project Goals
- Develop an onboard passenger counting system
- Provide GPS locations for location tracking
- Provide remote communication between system and dispatch

Results
Unit and systems tests for the application layer, computer vision layer, location tracking, and GNSS are provided and verified for all major subsystems

References