NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

BUS VACANCY CHECKER

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SCSE GSC

24hackathon
15 – 16 February 2020

Graduate Students' Association NTU

Problem Statement

1. Addressing UN SDG 11
2. Targeting users of campus buses in NTU
3. Aims:
    a. Minimize waiting time
    b. Minimize Fuel Wastage
    c. Minimize overcrowding of buses in peak hours

Solution

1. Backend computer vision system inside the buses at each door which detects the number of people entering and leaving the buses.
2. Frontend application for users showing the crowd in the incoming buses so that users can find an alternative if they are full.
3. Backend real time scalable database which can be used in the future for predicting demand of buses using machine learning techniques.

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Outline of Methods

1. OpenCV, pyImageSearch's centroid tracking algorithm, Pre-trained MobilenetSSD caffe model is used in Python
2. HTTP request is used for NTU's real time bus data
3. Firebase realtime database is used for scalability
4. Frontend application is used using PyGame and tKinter

Impact and scope

1. The realtime database will be very useful for predicting crowd movement in NTU through buses and will be able to solve the problem sufficiently
2. The frontend for Bus Vacancy should be implemented in NTUWave's app easing life for students and teachers in NTU

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Thank You

Any Questions?