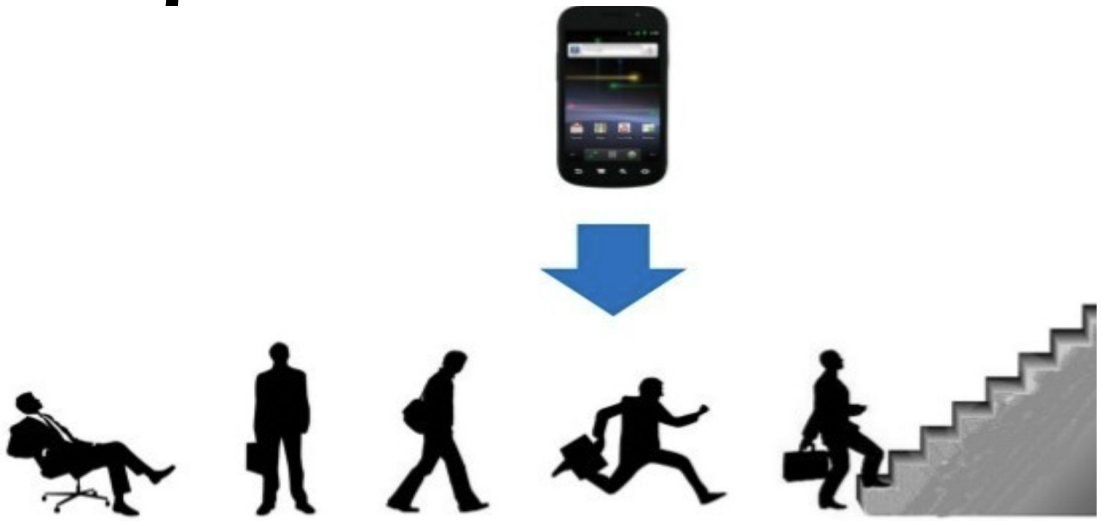
CMPE 255 Project

Human Activity Recognition with Smartphone - Team 8



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Abstract

- **Human Activity Recognition**(HAR) is classifying activity of a person using responsive sensors that are affected from human movement.

- This project is to build a model that predicts the human activities such as Walking, Walking_Upstairs, Walking_Downstairs, Sitting, Standing or Laying from the smartphone dataset.

- Data retrieved from smartphones' accelerometer and gyroscope sensors are classified in order to recognise human activity.

Dataset

This dataset is collected from 30 persons (referred as subjects in this dataset), performing different activities with a smartphone to their waists. These participants performed daily living activities while carrying a waist-mounted smartphone with embedded inertial sensors.

How data was recorded?

- The data is recorded with the help of sensors (accelerometer and Gyroscope) in that smartphone. This experiment was video recorded to label the data manually.

- These sensors(Gyroscope and accelerometer) captured '3-axial linear acceleration'(*tAcc-XYZ*) from accelerometer and '3-axial angular velocity' (*tGyro-XYZ*) from Gyroscope with several variations.

- The acceleration signal is separated into Body and Gravity acceleration signals(***tBodyAcc-XYZ*** and ***tGravityAcc-XYZ***).

Demo

Github

Google Colab Notebook

Future work

- **Mobifall and MobiAct dataset** - For the elderly this dataset helps in attention in the field of wellness ,assisted living and contained orientation data as well for the fall simulation.
- **Berkeley Multimodal Human Action Database (MHAD)** - This project is about the Recognition of Human Movements and Movement Styles .This dataset included actions with movements in both upper and lower extremities ie. *jumping in place, jumping jacks, throwing*,*waving hands, clapping hands ,sitting down and sitting up* having a total of 11 activities.

Applications

- Customize the model based on our personal daily activities and set fitness health goals
- Target Advertising based on static/dynamic activity

THANK YOU