Indoor Localization using Sensors on Smart Devices:

In this project we developed localization technologies that leverages on RF sensors such as Bluetooth Low Energy (BLE) beacons or WiFi-RTT access points. The system was developed it can provide various level of localization resolution such as proximity, room level, precise coordinates (like google maps). The system is modular in nature and can utilize information from multiple sensors such as BLE, WiFi-RTT, floor plan, Inertial Measurement Unit (IMU) etc. The system modular such that it can be adapted for variety of applications such as manufacturing, museum visits, hospitals, office visits and can be deployed as a smartphone application.

Localization of Endoscope

In this project we developed an image based endoscope localization system that combines deep learning predictions with traditional computer vision methods to estimate the pose of the endoscope. The deep learning model classifies the area/zone of the endoscope which is further utilized to do feature matching using traditional computer vision technique.

Activity Recognition using RF Sensors

In this project we developed an activity recognition using RF sensors which can be mounted under desks or walls. The system was tested for variety of applications such as activity prediction at checkout counters (e.g. scanning items, bagging), activity prediction performed by office desk users (e.g. typing on keyboard, reading on desk) and space utilization of display counters in stores (e.g. apple stores). The system is non-intrusive in natures as it only captures movement through RF signal reflection.

ContextualNet: An image based localization platform

In this work, we developed an image based localization system that estimates the location of the robot/smart device user using RGB images. The system is developed using a CNN-LSTM based deep learning framework. The combined system is able to exploit spatial relationship within an image using the CNN layers and the temporal relationship between images using LTSM layers. The system was tested in real-time both on a robot frame and a native smartphone application.

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<b>Indoor Localization using Sensors on Smart Devices </b>

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<a href="https://www.youtube.com/watch?v=bjbSwUveuXs">[Video]</a>

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