Smart Shelves for Retail Stores

'Smart Shelves for retail stores' is a IOT application that aims at implementation of Smart Shelves, the electronically connected shelves which can automatically keep a track of the inventory in a retail establishment. The Smart Shelves technology can be hugely beneficial for the retailers' selling experience. The smart shelf concept will enable the inventory and store executives to refill stocks from stock room as they get depleted from the store shelf, intimate the buying group about the demand and Out of stock situation. Inform warehouse / Direct shipment vendor for immediate replenishment. Dissatisfaction of the customers due to out of stock items in retail physical stores is one of the biggest current challenges the retail industry is currently facing. The 'Out of Stock' Challenge in Physical Stores leads to customer dissatisfaction, which can possibly impact their future visits/ purchasing decisions with the same store. Failures in internal processes, resource constraints, data disconnects or poor data sync contribute to some of the reasons behind this instore experience failures.

Smart Shelves will implement wireless inventory control system that will be fitted with weight sensors. The weight sensors can be built-in the shelf itself or be installed under normal shelves. These weight sensors should consistently notify the back-end system about the existing quantity of items on the shelves. These wireless devices will use RFID tags and readers to scan the products in the display and stock shelves and must alert store associates when product levels are running low or when a theft is detected. It will also trigger the back-end system about the items that do not belong to certain shelves as "misplaced items". The frontend designing will be implemented using Oraclejet. API will be designed using nodejs and express framework. Back end implementation will be using MongoDB. RFID data will be read using Impinj software.

With Smart Shelves technology, retailers should auto track the stocked goods and make sure there is surplus inventory to avoid being "out of stock". Smart Shelves should enable real time and accurate management of inventory data to empower retailers to optimize the in-store sales with the timely filling of stocks, review of items etc. Remote monitoring provision must help retailers to remotely keep a track inside the store and help in quickly identifying and fixing problems inside the store if any, before it impacts the customers. The hardware associated with Smart Shelves must be compatible with any mobile network provider / any radio frequency (RF) devices / language.

Student Name: K Vasuki

USN: 1RV14MCA42

Company Name: Robert Bosch Engineering and Business Solutions

External Guide: Muthukumar Munuswamy, Chethan Munikrishna

Internal Guide:Anupama