CHAPTER 1

INTRODUCTION

Industry 4.0 is revolutionizing the way companies manufacture, improve and distribute their products. Manufacturers are integrating new technologies, including Internet of Things (IoT), cloud computing and analytics, and AI and machine learning into their production facilities and throughout their operations. These smart factories are equipped with advanced sensors, embedded software and robotics that collect and analyze data and allow for better decision making. Even higher value is created when data from production operations is combined with operational data from ERP, supply chain, customer service and other enterprise systems to create whole new levels of visibility and insight from previously stored information. This digital technologies lead to increased automation, predictive maintenance, self-optimization of process improvements and, above all, a new level of efficiencies and responsiveness to customers not previously possible. Developing smart factories provides an incredible opportunity for the manufacturing industry to enter the fourth industrial revolution. Analysing the large amounts of big data collected from sensors on the factory floor ensures real-time visibility of manufacturing assets and can provide tools for performing predictive maintenance in order to minimize equipment downtime.

The goal of this project is to build a battery-powered IoT device that will monitor the accessibility of fire extinguishers and fire exits in a factory or any other premises. The idea is to have a device that will alert the user if any obstacles are blocking the accessibility to a fire extinguisher or a fire exit in case of an emergency. The alert is implemented in two ways. The device will have an inbuilt buzzer that will start to ring if any obstacle is detected. At the same time, the device will also update the data on the server. For ease of monitoring, it comes with a real-time web dashboard where the safety team or the person responsible for the safety of the premises can easily identify the blocked regions and can order to remove the obstacles. The device will have multiple fail-safes so that it can at least perform basic functions if the server or the network is down. With the fourth industrial revolution, these smart sensor networks can help in monitoring and improving the safety in a factory.