CHAPTER 1

INTRODUCTION

This chapter will cover about the introduction of rehabilitation, project background, problem statements of the project, objectives and project scope.

1.1 INTRODUCTION OF REHABILITATION

Rehabilitation is the process of helping an individual achieves the highest level of function, independence, and possible quality of life [1]. This process requires the patients to do repetition physical exercises and continuous monitoring in order to knowing their improvement rate.

1.2 BACKGROUND OF STUDY

Healthcare is the challenging issues for many countries due to increasing of aging population over time and people living with chronic disease [2]. The functional status is important especially for elderly and chronic disease. Physical activity plays an important role in improving the human health[1]. Physical activity has been defined as any bodily movement produced by skeletal muscles that results in energy expenditure [2]. Monitoring daily activities are the best platform for assessing the changes in body physical and behavior. Physical activity in daily life can be categorized into sitting
standing, lying, walking, running etc. Transition between activities can present pattern that indicate the quality of movement.

### 1.2.1 HUMAN BODY SYSTEM

Human body system is a collective of functional unit made by several organs in which the organs work in complete coordination with one another. It is made of ten different systems. Every systems need support of other system to maintain the human healthy. If one of these system is not functioning, it will lead human to death.

**Figure 1.1:** List of Human Body Systems
In this project focused on human skeletal system. Skeletal can be defined as the hard framework of human body. Skeletal system consists of bones, associated cartilages and joints. Bone is a tough and rigid form of connective tissue. Cartilage also a form of connective tissue but not tough and rigid as bone. Joints are important components of human skeleton because they make the human skeleton move freely. Human skeletal system functioning as gives strength, support, shape, protection and cell production.

1.2.2 APPROACHES FOR HUMAN MOVEMENT SYSTEM

The existing movement systems has used different approaches to improve the human healthcare. Mostly approaches used are video based system, wearable sensor based and environmental sensor based [2].

![Figure 1.2: Systems approaches for human movement system](image)

**Video based system**: These systems use camera for tracking and recognize physical activity. This system often works fine in laboratory but fails under a real home setting because of varies circumstance such as lighting. In additional, the device such as camera are mostly expensive [2].

**Wearable sensor based**: Systems are designed to continuously measure data for the recognition of daily human activities. These system requires repetition motion of the human body. Wearable sensors are suited to collect data on daily activity patterns because they can be worn on body [2].