CHAPTER 1

INTRODUCTION

1.1 Introduction

This chapter will briefly explain about the introduction of this project. The general information about the project is including the discussion of topics related to this project. These chapters consist of the project background, problem statement, objectives, project scope and expected outcome. The information in this chapter is important to make further study of the problem.

1.2 Project Background

Music is an art that involves a combination of sounds that can consign human feelings and thoughts. Of all the music instruments, saxophone is one kind that is contributing a lot to the music industry nowadays. The saxophone is a musical instrument that belongs to woodwind instrument family. Originally it is popular with military bands; saxophone soon became a part of popular music and jazz. They are made of brass and played with a single reed mouthpiece similar to playing clarinet. But, do we offend see the saxophone can play automatically?

Alternatively, the saxophone is the suitable instrument to apply the self-playing concept. Briefly about the saxophone, they were built in many types such as Alto Saxophone, Soprano Saxophone, Tenor Saxophone and many more. As the other instrument, saxophones were assembling in many parts. The main part of the saxophone is the mouthpiece which consists of the mouthpiece and the reed, the hollow body part, and the saxophone keys. Each type of saxophones was different in note key they can
play, the numbers of key pressed and the octave note. Usually, the alto saxophone is the one that chosen by many people due to the note that can be play are standard. The MIDI Auto-Sax will use the Alto Saxophone as the instrument. The Alto saxophone has 23 keys on the body to control which note will produce when it sounds.

The invention of the MIDI Auto-Sax is actually an initiative to build up an autonomous Alto saxophone that played via MIDI by combining few elements including MIDI decoder program, Digital I/O and mechanical and pneumatic actuator. A saxophone that can tune automatically through the MIDI is the aim of this project. The MIDI Auto-Sax is one of Musical Robot that will conduct the saxophone automatically. The autonomous parts are controlled by the computer program or the microprocessor.

![Figure 1.1: MIDI Auto Sax Part](image)

The MIDI Auto Sax is divided into four parts as shown in Figure 1.1. The MIDI decoder and controller program is the software part of the device while the mechanical structure and pneumatic blower are the hardware part which consist of electronic, pneumatic and mechanical elements. This intention of this project is to complete the software part of the MIDI Auto Sax device.
The general idea of this device is the MIDI input converts by the decoder to send out output to play the instrument. Taking WASEDA Flutist Robot in Figure 1.2 as an example, it is a well-known robot that is capable of playing a wind instrument such as saxophone, clarinet and flute. These are the humanoid robots that are programmed based on human minds and body. The program and the body are the mechanism to make the robot act.

1.3 Problem Statement

In real life, the way to play saxophone is complicated and need a very well trained to play the instruments. Maybe some people like to hear and very fanatic on saxophone sound but cannot afford to pay the saxophone player to play the saxophone every day. Through the technology development become more sophisticated nowadays, the concept of self-playing musical instrument can be applied to the Saxophone and see how far the system can play the saxophone compare to human. In order to control the Auto Saxophone, the MIDI will file is the suitable format to send the musical instruction to the device.