

UNIVERSITI TEKNOLOGI MARA

**FABRICATION OF A PORTABLE 3D
HOLOGRAM PROJECTOR**

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ABSTRACT

This project explores the development of portable 3D hologram projector to increase students' engagement and interest in learning. Traditional 3D projectors are bulky and heavy, making them difficult to port and install. Setting up projector requires significant effort and technical knowledge, which limits their usability in various environments. The aim of this project is to develop and manufacture a compact and user-friendly 3D hologram projector. This device can display high quality 3D images, constructed with sturdy yet lightweight 1100 aluminum alloy as the casing, which promises easy transportation and installation. This innovative solution aims to overcome the limitations of traditional 3D projectors and make them suitable for education, training and marketing applications.

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CHAPTER ONE

INTRODUCTION

1.1 Background of Study

In the age of digitalization, the use of 3D hologram technology has been widespread throughout decades. By using light interference and diffraction to record and reconstruct light waves emitted from an object, holography is a 3D display technique that can display a natural 3D image in close proximity to the actual object without the need for scanning or synchronization processing. This technology makes it possible to display items without physical availability. As shown in Figure 1.1 (a), a 3D holographic LED fan uses an optical illusion technique called POV (Persistence of Vision) to project holograms that appear to float in the air at Figure 1.1 (b). The holograms are generated by many tiny, bright light-emitting diodes integrated into the fan blades and change color within milliseconds. The hologram fan comes with two or four blades; Each blade's LEDs are programmed to emit light at precise times and in precise sequences to display the entire hologram [1].

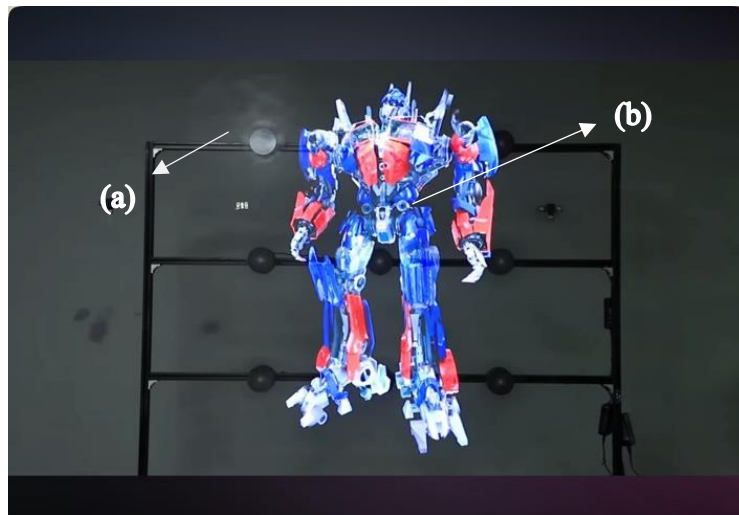


Figure 1.1 3D hologram fan model HD-F65 [2]

The idea of developing a portable 3D hologram projector came from observing a decline in student engagement and interest in traditional learning methods. In engineering, for example, students often find it more effective to visualize complex