CHAPTER 3
TRADITIONAL FOOD-MAKING SIMULATION

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3.1 INTRODUCTION

Interactivity stands as a vital element in virtual reality (VR), granting users the capability to seamlessly engage with virtual objects. A contemporary emphasis on gesture interaction has liberated VR enthusiasts from reliance on conventional controllers such as mice or keyboards. This evolution allows users to directly interact with virtual objects using their bare hands, fostering a more intuitive and immersive virtual experience. Traditional food is considered an intangible heritage that should be sustained by all generations, especially youth. However, many people have ignored the importance of cooking practices and techniques in traditional food. Therefore, this chapter discusses the development of a traditional food cooking simulation in the form of VR using natural hand gestures. By digitising traditional cooking practices and recipes through VR technology, the application serves as a digital archive of Malaysia's culinary heritage. Recipes, cooking techniques, and cultural insights can be preserved and documented for future research, education, and cultural preservation efforts.

3.2 TRADITIONAL FOOD-MAKING

The food-making and cooking simulation of traditional Nyonya cuisine, *Pulut Panggang* (grilled glutinous rice roll with spicy dried shrimp) has been proposed as a case study. *Pulut Panggang* is a traditional Malay dish that consists of grilled or roasted glutinous rice parcels filled with a mixture of seasoned grated coconut and savoury ingredients. The glutinous rice is often tinted with the natural blue colour of the butterfly pea flower. The parcels are typically wrapped in banana leaves before being grilled or roasted, imparting a distinctive aroma and flavour to the dish. The filling may include ingredients like dried shrimp, minced fish, or minced meat, seasoned with a blend of spices for a flavourful profile.

Cultural heritage consists of tangible objects (such as artworks, buildings, and artefacts) or intangible objects (such as language, stories, and food) as in Ramli et al. (2017). Malaysia is rich in culture and tradition, and it is well known as a food paradise. Traditional food, which is intimately linked to food heritage, has played an increasingly important role in society (Freina & Ott, 2015). Over the years, traditional foods have been transmitted from generation to generation, thus creating the national identity that defines Malaysia. People should be appreciative of the history that forms the basis of every traditional food, and they must understand the great value that their ancestors provided for them. Therefore, the food-making simulation has been developed in VR with a Leap Motion device to enable natural hand gestures. The user can naturally interact with the *Pulut Panggang* interface using their hand gesture, more lifelike to learn the making process of *Pulut Panggang*.

Ikram and Liu (2021) agreed Leap Motion technology is created to detect finger and hand movement with high efficiency, low power, and low delay. The advantage of using Leap Motion technology is that users can naturally interact with the interface using their hand gestures naturally, without depending on a tangible controller such as a keyboard and joystick.

3.3 FOOD-MAKING SIMULATION

Food-making simulation using VR could preserve our cultural heritage. Malaysian traditional food holds deep cultural significance, often representing centuries-old traditions, rituals, and culinary practices. By simulating the process of making traditional foods, such as Malaysian dishes like *Nasi Lemak* or Satay, using Leap Motion, you can preserve and promote these cultural heritage practices for future generations. Traditional food is often a key aspect of cultural tourism, attracting visitors who are interested in experiencing authentic culinary experiences. A food-making simulation can serve as a virtual gateway to cultural heritage sites, markets, and kitchens, promoting tourism and economic opportunities for communities to preserve their culinary traditions.

A food-making simulation in VR provides an immersive and interactive way for people to learn about traditional culinary techniques and ingredients. Users can explore the steps involved in preparing traditional dishes, gaining insights into the cultural context and significance of each ingredient and cooking method. While traditional food-making simulations aim to preserve cultural heritage, they can also inspire innovation and adaptation. Users may experiment with new ingredients, techniques, and flavour combinations within the virtual environment, contributing to the evolution of traditional cuisines while still honouring their roots.

Traditional food-making simulations can facilitate the transfer of culinary knowledge and skills from older generations to younger ones. By engaging in virtual food preparation activities, younger individuals can learn from elders and experts, ensuring that traditional culinary practices are passed down through generations.

Implementing Leap Motion in a food-making VR application involves integrating hand tracking and gesture recognition capabilities to simulate realistic interactions with virtual ingredients and cooking utensils. Design a virtual kitchen environment within your VR application where users can interact with ingredients, cooking utensils,