

**Universiti Teknologi MARA**

**The Banjir Rescue (An IoT-Based Flood  
Evacuation Center System)**

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## ABSTRACT

One of the important process involves when disaster happens is to allocate the victims to the navigation center. Current evacuation practice may cause further damage as the victims need to wait for the rescuer team to come. Thus, a self-navigation system would allow the victims to save their life and belongings sooner by determining the appropriate evacuation center. In this approach, the appropriate evacuation center is determined based on two critical parameters which are the water level and distance. First, the near-real time data retrieved from water level sensor set up at the evacuation centers is sent to the system and being compared with the evacuation centers' water threshold value. The algorithm will then proceed with the second phase that is checking for the distance between the victims' current location and the evacuation center, if the water level found at the first phase is less than the threshold. Finally, the selection is made where the algorithm will choose the nearest evacuation center to the victims. The system will get the coordinates of the appropriate evacuation center that passes both phases and send the coordinates to the installed navigation applications on the mobile phone such as Google Maps and Waze. The desired navigation app will be launched with the coordinates passed from the system to guide victims to reach the appropriate evacuation center. The result shows that the proposed approach could provide a near-real-time water level reading of each sensor and near-accurate distance calculation to the system to determine the appropriate evacuation center.

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# CHAPTER ONE

## INTRODUCTION

This chapter provides project background and its brief overview. It will clarify the problem statement, research objectives, scope and limitations, and its significance.

### 1.1 Background of Study

The disaster that takes place on earth categorized into two, which are natural and human-caused disasters. Malaysia often hit by floods, droughts, landslides, pollution, and disasters triggered by humans (Parker, *et al.* 1997), which commonly happen on a large scale, causing loss of lives and properties. Since Malaysia receives rain most of the time throughout the year, according to Ngai Weng Chan (2012), flood considered to be the most serious of all catastrophes in Malaysia, especially during the monsoon changing. During the monsoon changing, Malaysia experiences heavy rain, which usually will cause flash floods in cities like Kelantan, Terengganu, and Pahang. Hence, preparation is one of the ways to survive against natural disaster and their aftereffects.

Mobile applications have been helping people in every possible way, including in disaster management. By having a disaster management mobile application, flood victims can be notified of the situation and get shelter at an evacuation center. In order to minimize the potential loss, many researchers have tried to develop an early alert, prevention, during, and post-disaster system. As the human lifestyle is evolving to the Internet is Everything century, the mobile phone has eventually changed the way of communication. No matter what the situation is, the first thing people will look for is always the mobile phone. For example, during an emergency and even right after waking up from the sleep every morning. This can be supported with the report from Mobile Society Research Institute (2012),