

HUMAN DETECTION SENSORS FOR CAR POST-
LOOKING CHILD DETECTION SYSTEM

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ABSTRACT

This project presents the use of human detection sensors for Post-Locking Child Presence Detection system. The aim of this project is to detect the presence of humans, especially children left unattended in cars. The system is made up of a sensing unit which consist of human detection sensors such as Passive Infrared (PIR) motion sensor, MEMS thermal sensor, and a built-in microphone, that runs on an Arduino Uno microcontroller. The MEMS thermal sensor works through temperature differentiation, PIR sensor detects motion and the built-in microphone detects voice through frequency selection. The human detection sensors are the initial triggers for the Post-Locking Child Presence Detection System. The system is effective in detecting presence of humans in the car which can lead to the reduction of child left unattended cars.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

There has been a rise in the number cases of children being left unattended in cars. In January of 2014, a child was found dead after being left by his father inside their car. The child was left starving for nine hours [1]. In another reported incident in Subang Jaya, a three-year old child was left for five hours in a school park which resulted in her death [2]. A nonscientific media survey was done between 1998 and 2009 by Jan Null of San Francisco State University found out that fifty one percent of the incidents, parents or caretakers forgot the child was still in the back seat of the car and another 30%, the child was playing unobserved in a parked car and became trapped. Only 17% of the cases resulted from caretakers intentionally leaving behind their child in the car [3]. The interior temperature of a car parked facing the sun on a day in the low 80°F may reach 110°F within 45 min[4]. A child may suffer fatal hyperthermia (heatstroke) if left prolonged under these conditions. A child's body have less surface area relative to their volume, this means, there are less skin to dissipate heat [5]. The hot and sunny weather of Malaysia would add more towards the problem since it would speed up the process of suffocation. In addition to that, it is very unsafe to leave a child unattended due to the high number of kidnapping cases. Therefore, it is important to find a viable solution to overcome these problems.