COLLEGE OF COMMUNICATION AND INFORMATION TECHNOLOGY

INDOOR FIRE FIGHTING ROBOT

A Thesis
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Bachelor of Science in Computer Engineering

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COLLEGE OF COMMUNICATION AND INFORMATION TECHNOLOGY

CERTIFICATION

This thesis entitled **"Indoor Fire Fighting Robot"**, prepared and submitted by **Doreen A. Rosete, Abel C. Albuera, Christian R. Famoleras** and **Mark Anthony Victor Corpuz** in partial fulfilment of the requirements for the degree of **Bachelor of Science in Computer Engineering**, has been examined and recommended for oral examination.

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APPROVAL

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Abstract

Fire is one of the most important forces on Earth. The use of fire by humans has long been considered as a defining property of intelligence, separating us from other animals. The exact timing of the discovery and use of fire by humans has been a subject of continuing research. Three main components are needed for fire. First, there must be a fuel to burn. Second, oxygen must be available after all, combustion is essentially an oxidation process that gives off heat and light. And third, there must be a heat or ignition source that allows the fire to begin. We would not expect fire on a barren Earth; there must be plant life on land that can provide a fuel source. And vegetation fires can't occur until the oxygen level in the atmosphere has reached around 15%. (It is 21% today.) The main sources of ignition before humans appeared were lightning strikes. (Andrew C. Scott, June 1, 2018)

The interaction of three elements is needed for the creation of fire, as a result if any of the three removed fire is not possible to create.

Fire fighting, see *Background of the Study* for a brief history. (Joanne Vallejo, BFP spokesperson Superintendent, 2018). Fire incidents in the country increased on the said year, the Bureau of Fire Protection (BFP) records from Jan. 1 to Dec. 27 showed that a total of 14,316 fires occurred and 3,943 of which were recorded in Metro Manila. The figure is .84 percent higher compared to the

same period of year 2017. Thus the need for new fire preventing tools and systems are high.

Robotics, with the development in the field of robotics, human intrusion has become less and robots are being widely used for safety purpose. In our day-to-day life. Firefighting robot, fire accidents have become common and sometimes may lead to hazards that make it hard for the firemen to protect human life. In such cases, a firefighting robot is used to guard human lives, wealth, and surroundings from the fire accidents. This firefighting robot project is an advanced project for engineering students, who are interested in robotics. This project incorporates RF technology for remote operation and also uses 8051 microcontroller. A firefighting robot is capable of detecting fire if a house catches fire while someone in the house is either sleeping or not present in the house. By means of this firefighting robot, people and properties can be saved from fire accidents.

The researchers come up with a better design to contribute with this new technology on preventing fire, reduce the risk of lives and by mitigating the loss of property damages.

Indoor Fire Fighting Robot is a project design that can detect fire using flame sensor then extinguish it automatically using fire extinguisher. It can only be implemented indoors. The design is composed of three (4) major parts, the flame sensor, sound alarm system, notification system through SMS and fire extinguisher. Through the use of this robot, it will reduce civilian fatality, increase

response of fire fighters lessens the risk they may encounter and mitigate property loss and damages due to fire outbreak.

The researchers used the descriptive research method wherein the study focused on the current situation, and random sampling in determining the respondents of the study.

This project was tested and evaluated as perceived by the respondents on the following; the evaluation of Device Quality of Indoor Fire Fighting Robot and The evaluation of Acceptability of the Indoor Fire Fighting Robot.