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Analysis of The Use of Made Intelligence in Bomb Tamer Plan Robotics Working System

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Abstract. The Use of Artificial Intelligence or Artificial Intelligence, in Planning the working concept of Robotics systems in taming BOM. This discussion is to help and manage the work of Humans so that they can reduce the consequences that are likely to occur if Humans are careless in taming BOM. If there is an accident that is not intentional, then Humans will not be injured because it has been handled by a robot that is controlled to defuse the bomb. With the replacement of the Human function in taming BOM, it is hoped that the existence of this bomb disposal robot minimizes human casualties in terms of defusing BOM, if something happens that is not cooled in the Robotics Work system, it is only used to help, not as the main element, like ordinary humans, namely to prevent the emergence of victims, as well as to reduce the anxiety that befell the community. So that it becomes calm and self-confidence arises that the situation and condition of the country are safer and more controlled. Using this Artificial Intelligence System (Artificial Intelligence), the system is Computer-based capabilities will see in solving problems encountered by the Bomb Tamer Officer, to save the community from disaster.

Keywords: Bomb tamer, robotics work system, security.

1. Introduction

In this day and age the crime that threatens the stability of the Security of the People and the State is increasing, especially those that disturb the Society about the existence of various types of bombs that are installed in certain places by irresponsible people or a group of Terrorism .. Therefore the development of techniques in terms of handling bombs necessary. Because of the increasingly sophisticated form of bombs used by terrorists to launch their actions. In this case, there is a method that is used, namely, by using the Bomb Squamer. Planning the working system of this Bomb Exploiting Robot serves as the procurer of the Human Task in defusing the Bomb directly, at the scene, before the Bomb explodes. So, in this case, the bomb disposal robot will be designed to have human-like behavior, so that in carrying out its tasks, it can cooperate with what humans do directly. So that if a bomb happens to explode, then the robot will be affected. Whereas Humans or the operators that control it are at a safe distance. In its planning, the Work Concept of Artificial Intelligence systems that applied to the Bomb Squad Robot follows the Human structure, which is prioritized in the Feet and Hands-only physically. Because in conducting the bomb disposal itself, the primary function needed is in the legs and arms. In carrying out activities to retrieve and defuse the Bomb. Hands hold tight not to fall down the Bomb, and feet dash to secure and keep the Bomb away from the crowd of the Community. If the Bomb happens to be far away from the Community.

1.1. Problem Formulation

With the Planning of Bomb Taming Robotics Work Systems, then many issues must be addressed, including:

a. How to make the sensor work system that is applied to the Robot, so that it can find out The Bomb in front of him is a dangerous object.
b. How to design a Robot Intelligence Control Application, if it has managed to tame Bomb, what should the Robot do.
c. How to make a Control Program so that the Robot can read the situation, which area The many Communities, and which areas are devoid of Society to keep the Bomb away from many communities.
d. How to make the physical condition of the Robot, so that it can dash after taming Bomb, and not physically destroyed, if the Bomb that is carried away exploded.
e. How to make a Robot Control Application System manage and control it in defusing the Bomb, which is controlled remotely, which works perfectly.

1.2. Research Objectives

Analysis of the Use of Intelligence in Planning Robotics System has several objectives, including:

a. Assist Security Officers in securing Bombs installed by Persons Unknown so that it can accelerate and cope with the explosion of the Bomb.
b. Make an Artificial Intelligence System Control Planning that applied to officers Artificial in the form of the Keja Robotics System. Also, develop the use of Artificial Intelligence
c. Improving the Security and Safety of the Society from covert threats of crime, who want to confuse the situation and conditions in which the community located
d. Try and develop an Artificial Intelligence Work System, in Controlling physical form Which helps the task of personal work, by using artificial intelligence applications.
e. Reducing the havoc and unrest that befell the community so that The community believes that the Bomb is not so dangerous, because it can handle in a Manner **quickly, without causing Human casualties.**

1.3. Research Benefits

The benefits of the research include:

a. Can Assist Security Tasks quickly and on time according to the time of detonation of a Bomb, with the help of the Artificial Intelligence System work.
b. This artificial intelligence system can be studied and used in problems related to interests and security in the Community Environment.
c. Can be used as learning, to educate security officers in the security events related to Social and Politics can anticipate dangerous activities People.
d. As a Science Development that must be developed by students, that Software Tecnology can handle the occurrence of accidents that are detrimental to the community.
e. Learning for Students to develop a Computerized System, which useful in maintaining security and overcoming the activities of other parties that can be harmful Nation and State Society**.**

2. Literature Review

2.1. Artificial Intelligence (Artificial Intelligence)

Artificial intelligence (artificial intelligence) is one part of computer science that makes machines (computers) can do work like and as well as humans do. Artificial Intelligence has Comparison, among others:

a. Artificial intelligence is more permanent.
b. Butane intelligence is more easily duplicated and disseminated.
c. Cheap butane intelligence
d. Artificial intelligence is more consistent
e. Artificial intelligence can document
f. Artificial intelligence can do the job faster
g. Artificial intelligence can do the job better.

Whereas Natural Intelligence:

a. Creative, the ability to add to or fulfill that knowledge is inherent in the human soul. In artificial intelligence, to increase knowledge must be done through a system that built.
b. Natural intelligence allows people to use experience directly. Whereas artificial intelligence must work with symbolic inputs.
c. Human reasoning can widely use, whereas artificial intelligence is minimal.

The following are the Application System Elements that exist in Artificial Intelligence or Artificial Intelligence in the Figure 1.

The purpose of artificial intelligence:

a. Make the computer more useful and understand the principles that make it possible to be smart.
b. Understanding the meaning of artificial intelligence (scientific objectives) and its Application.
c. Making machines more useful (entrepreneurial goals) and able to help deal with A problem that is faced by humans.

The concept of artificial intelligence work includes:

a. Turing Test related to Meiode of Intelligence Testing
b. Symbolic processing that handles problems related to Data Codes
c. Heuristic
d. Conclusions Withdrawal (Inferencing)
e. Pattern Matching

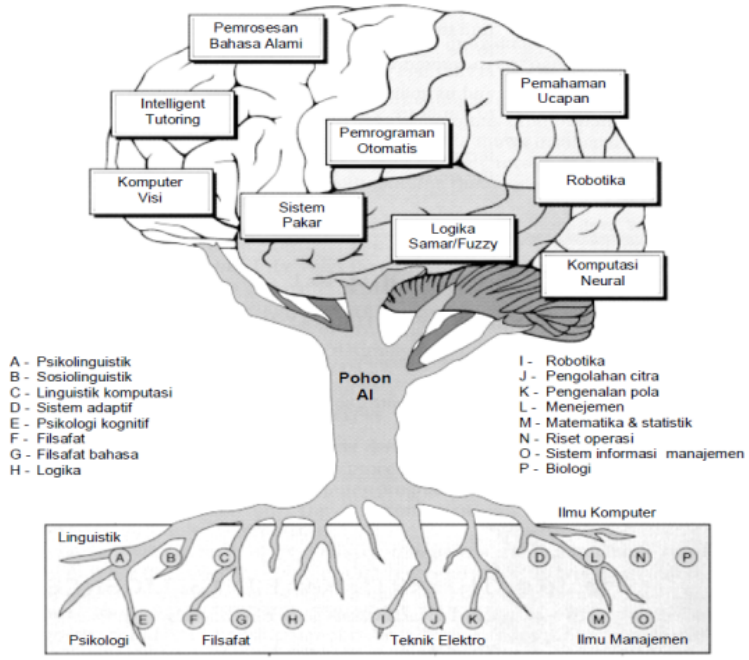

FIGURE 1. Artificial intelligence trees and their main applications

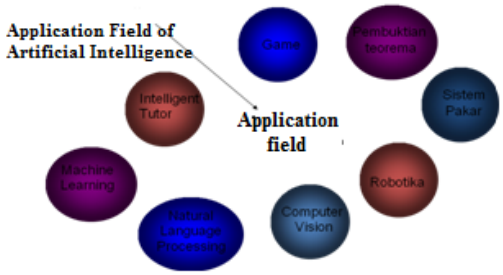

FIGURE 2. Schema of Application Field

FIGURE 3. Commercial Sector Schema

2.2. Robotics Systems

Robotics System is a working concept designed through computerization that applied to the skills and abilities of Humans. With Work Activities controlled by Humans. The work program based on Artificial intelligence systems.

A robot is a mechanical device that can perform physical tasks, both using supervision and human control, or using a program that has been defined in advance (Artificial Intelligence). Understanding Robot is: "an automatic device that performs functions ordinarily ascribed to human beings." Alternatively, from the understanding of the Robot Institute of America: "A reprogrammable multifunctional manipulator designed to move materials, parts, tools or other specialized devices through a variable programmed motion for the performance of a variety of tasks". The types include:

a. **Mobile Robot (Moving) that can move places.** Mobile Robot is a robot construction whose characteristic is having an actuator in the form of a wheel to move the whole robot body.

b. **Humanoid Robot**. Namely, a robot that can resemble humans, both function and way of acting.
c. **Robot Manipulator (Hand)**. This robot only has one hand like a human hand whose function is to hold or move things, for example, this robot is a welding robot in the car industry, a robot assembles electronics and others.
d. **Legged Robot**. This robot has legs like animals or humans, who can move and move actively.
e. **Flying Robot**. Namely, A robot that can fly, this robot resembles a model plane that is programmed to monitor the situation on the ground from above, and also to continue communication.
f. **Underwater Robot**. This robot is used under the sea to monitor underwater conditions and also to take Something under the sea.

3. Research Methods

Research methods to obtain data as a complement to the making of this report obtained through:

a. Interview
Namely Contacting People Who Know About Bombs Asking about how the Bomb explosion works, How much time the Bomb went off, how far did the Bomb explode from security activities, How to prevent bomb explosions, and how to anticipate the explosion of the bombs.

b. Field observation
Namely Contacting Regions after the Bomb explosion, and asking what type of Bomb, Bomb Blast strength, the distance of Bomb explosion from its Victim, How to detect and ways defuse the Bomb that has not exploded, how many seconds the officer speeds to secure and bomb the Bomb so that it explodes in a place far from the crowds of the public Targeted to detonate a bomb.

c. Literature review
A literature study is conducted to find references to find related material The Material is covered, such as the Artificial Intelligence Book, which is the basis for the design The Concept of Robotics Work read forward about the bomb explosion incident carried out by Irresponsible people, watching and observing Shows on Social Media and Television about Bomb blasts in the Community Environment, and studying the work of Tamer Robots Bombs that are already owned by the National Police, as well as learning Robots that have been created by Other countries.

4. Result and Discussion

4.1. The Concept of Artificial Intelligence Work in Robotics

With the intelligence of BUHAN or AI, a robot can think like humans Normals Although perfection can not fully resemble humans. Intelligence Artificial (Artificial Intelligence) in robotics is intelligent (which see) intelligent, which program into the robot controller. Smart understanding here is very relative, because depending on which side someone looks at, and can be managed and implemented by Robot.

4.2. AI (Artificial Intelligence) Technology applied to Robotics

A robot is a human technology engineering that is very riveting. A robot is a tool mechanics who can perform physical tasks, both using human supervision and control, or using pre-defined programs (artificial intelligence). The Robot usually used for heavy, dangerous, repetitive, and dirty work. Tar entry helps detect and defuse bombs, which they store may be unknown by humans. This issue requires the Control Program below:

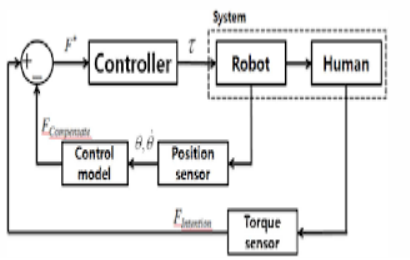

FIGURE 4. Control Techniques

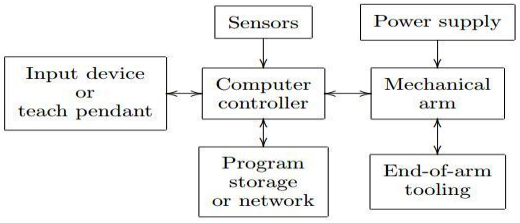

FIGURE 5. Basic Components of Robotics

4.3. Artificial Neural Networks

A neural network is a parallel mass distributed processor consisting of simple processing units, which also have a natural tendency to store experience knowledge and make it available for use "learning systems is a process of adding knowledge to the neural network (NN) whose continuity is Neurons are the fundamental part of processing an NN. The basic shape is like the image below:

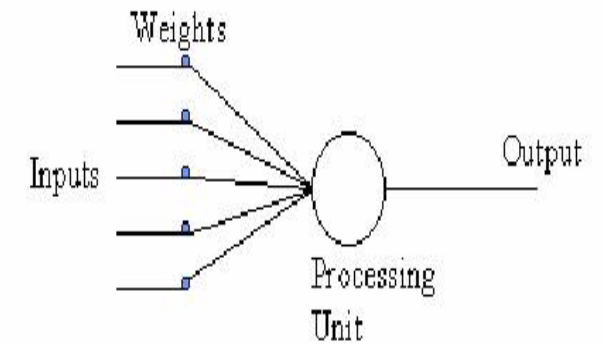

FIGURE 6. Basic forms of neurons

4.4. Work Concepts of Bomb Tamer Robotics Systems

In this concept, as seen in an incident, there is a Robot Pendektei Robot. The object is where the bomb was kept and hidden by the culprit. Here it is clear that there is a working system for tracking traces, which is modeled by line tracking work, and the robot moves in search of bombs, which are known by the microcontroller. The basic form is as follows:

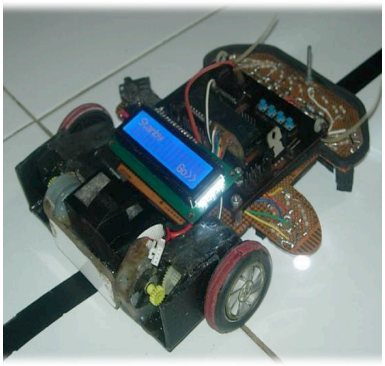

FIGURE 7. Line Follower Robot

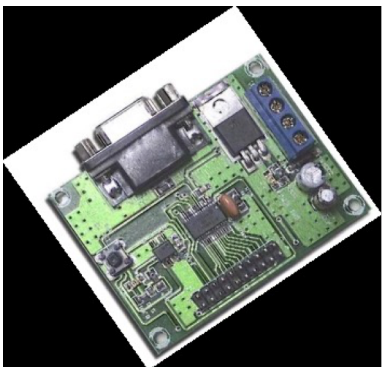

FIGURE 8. Microcontroller Application of Robotics

The planned Bomb Tamer Robot designed like a Man with Legs and Hands. Its function is to take the bomb and run to a place where there is no community. It Can kill the bomb and can throw the bomb. Bomb detection and taming robots that already exist and are owned by the National Police, one of its forms is as follows:

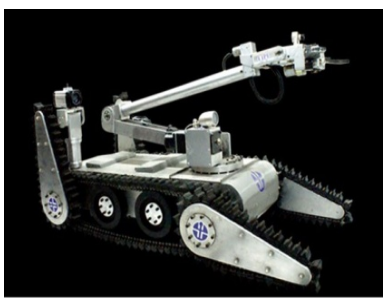

FIGURE 9. Existing bomb detecting and tracking robot

4.5. Planned Bomb Tamer Robotics System

Referring to the existing Work System, Here, Roboy is planned to be able to detect, be able to tame the place. Also, it can run as described above. Therefore the Robot must be able to see through the work of the Sensor, the Robot can make decisions with the Programming, and the Robot can act and control themselves with the formulation of the Robotics Work System. Planning is determining, when the activities in conducting bomb disposal, the Robot can do it in two ways, among others:

a. Detecting through sensors, after knowing of an active bomb, the Robot Approached the Bomb and took it to a place further from the community. All until the Bomb does not explode in the crowd.
b. Robots that form like humans have a control system that is carried out by Humans, by being burdened with the Control and Timing Program. So that the power The response time through the Sensor is faster than the time the Bomb went off. So with The Sensor, the Robot can capture the time the Bomb explodes. For example, Bomb Will explode in 20 minutes, and the seconds are still running, before the second to determine the burst Bomb, the Robot with the speed of time it has, can inhibit and reduce stop the next second. So that the bomb detonation process time will stop, and the Robot can take the Bomb and secure it. From the Two methods, the plan will be chosen and made according to the needs of Security and Security, so that in bomb disposal, which is currently carried out by Human Officers, if done by the Robotics System, will prevent the Victims of Human Officers.

4.6. General Robotics Work System

Robotics Work System designed to carry out activities, tailored to their needs. One of the work processes carried out includes:

a. Robotics Expert System, which is an expert who is proficient in formulating the work System of Robotics, following with its use, as well as the working concept example as below:

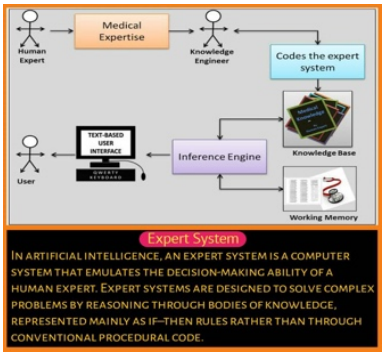

FIGURE 10. Robotics Expert System

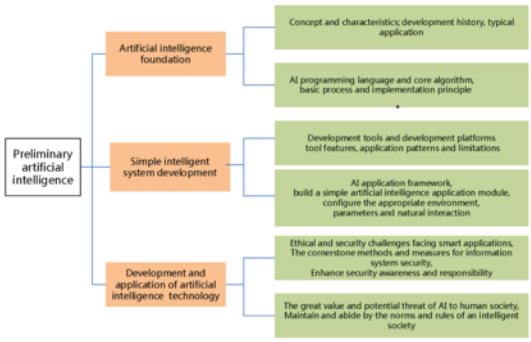

FIGURE 11. Working Structure Figure

b. Sensor Work System, is to catch and detect the event that must be handled by Robot. Also, the Robot can do orders under human control. Electronic Robotics System Components, and Sensor Control.

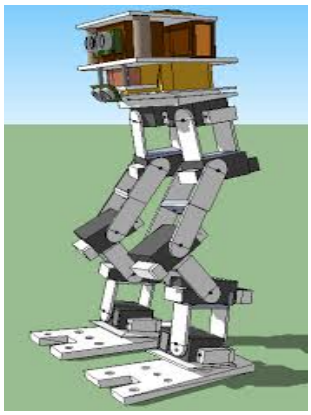

FIGURE 12. Sensor users

Object detection sensors can be divided into:

1) Proximation sensor: usually a sensor with binary output. Objects are only known if they enter a specific zone around the robot. Outside that zone, the object ignored.
2) Distance measurement sensor: besides knowing the existence of an object, the sensor can also know the distance of the object from the robot in a specific distance range.

Besides these two main uses, the light sensor can also use as a temperature gauge (infrared) and a fire sensor (ultraviolet). Besides sensors supported by the presence of a photoresistor to detect robot movements in the dark and light, with the sensor.

The intensity of light is inversely proportional to the value of the photoresistor resistance, or in other words, proportional to the value of the conductance. Darkness causes the resistance to increase, while the lightness causes the resistance to decrease. Photoresistor resistance values range from a few ohms to several kilo-ohms. Example Image as below:

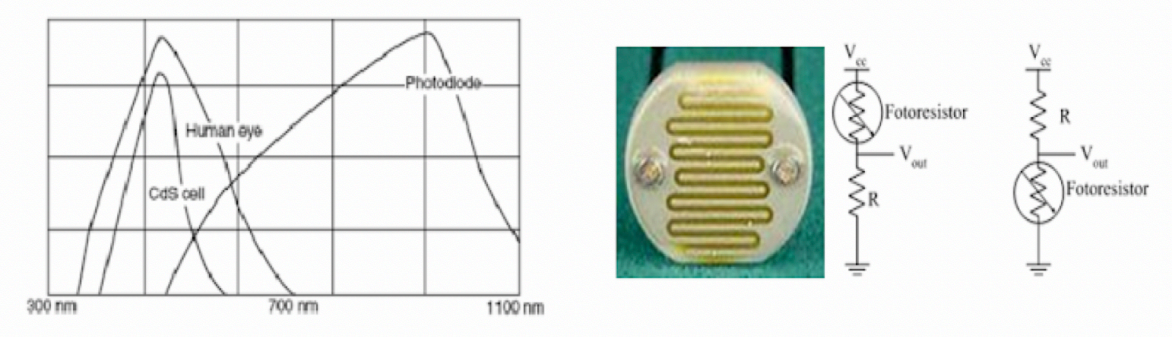

FIGURE 13. Photograph of resistors with photodiodes and their circuits

5. Conclusions

From the Use of Artificial Intelligence for planning Bomb Taming Robotics work systems, which have been described above, after the successful Robotics work system, there will be several conclusions when used, among others:

a. Using this Artificial Intelligence System (Artificial Intelligence), the system is Computer-based capabilities will be seen in solving problems encountered by Bomb Explorers, to rescue the community from disaster.
b. Artificial Intelligence can be designed, and used for the Control System that is applied to the system of work carried out by humans, to meet the interests of society many are in their environment.
c. Expert System that designs and formulates the concept of human work to Artificial Intelligence, reflect the development of Computer System Applications, which are capable of handling Tasks Humans in the field of Security and Security in the Community Environment.
d. With the establishment of the Bomb Enforcement Robotics Work System, the Officers will carry it out it works safe, and avoids the catastrophe of a bomb explosion, and can work calmly and vigilantly in dealing with problems in the Community Environment.
e. Robotics System in the form of Human-Robot, can work accurately, and not experience fear and risk due to the bomb explosion. Because of not an ordinary man but capable handle Human Tasks related to community security and safety.

The use of Artificial Intelligence for planning this Bomb Tamer Robot, in its Application The concept works after it is successful, then several suggestions need to be addressed include:

a. Review the Artificial Intelligence System work, especially in the elements of control and Robot movement arrangements in determining decisions, and carrying out its activities.
b. In Artificial Intelligence Systems, it is necessary to have a formula for calculating and controlling work methods The robot accurately determines and reads the time, in the face of its work tasks. So thus there is a time limit in carrying out its activities.
c. There is a need to develop this Artificial Intelligence Application, to deal with these problems. more beat problems than detecting and defusing the bomb. The aim for in the face of sudden disasters, the need for a Radar Robotics System.

d. After the Robotics Work System has been formed, it is recommended that Control is used Robot movement carried out by people or officers who understand about intelligence Artificial, and understand how the Robot works in its activities, from an Expert.
e. With the existence of the Robotics Work System, Bomb Exploiting Society, and of ficers do not so believe and do not rely on robots because there are weaknesses, the name is also Object Die. However, the community needs to be vigilant and cautious, as well as officers need the training to Strengthen the task of working in defusing the bomb. If later, the robot can get an explosion Bomb, which was caused by a late Officer coming to the location, and the time was near to the Bomb explosion**.**

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