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Potential of intelligent system development in thermal imagery application

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Infrared thermography also known as thermal imaging is an example of infrared imaging science that can be obtained by using thermal camera where it detects infrared and displays thermogram image. The basic principles of thermal imaging are improving visibility of objects in a dark environment by detecting the objects' infrared radiation and constructing visual temperature information based on pixel resolution. As the theory of black body radiation, all objects in the world emit infrared energy, a thermal camera has capabilities to measure and visualize the infrared that is emitted by an object based on function of their temperature. In general, the hotter an object is, the more is the radiation it emits. A thermal camera that has infrared lenses is essentially a heat sensor that is capable of detecting tiny differences in temperature. The device collects the infrared radiation from objects in the scene and creates an electronic image based on information about the temperature differences. Infrared thermal camera is being used in various applications for monitoring, inspection and diagnosing mainly in high end industry such as electrical power inspection, mechanical testing, motor fault, microelectronics, composite research, automotive, surveillance and environmental. Since the principles of black body radiation being applied in thermal camera, any object that radiated infrared can be measured and constructed in a form of visual image. Hence, any single change of object will produce a unique infrared radiation where it can be translated into different temperature values. As the application of thermal camera is very practical and useful for monitoring and inspection of fault or anomalies, research on thermal imagery analysis has become more relevant in order to develop an intelligent system for the inspection purposes. In this paper, we will discuss a few potential applications of thermal imaging analysis for intelligent system development where the imaging analysis has been applied to analyze the fault or abnormal objects. The application that is currently ongoing develops under Vision and Intelligent Research Lab (VisIS); Universiti Malaysia Pahang is intruder detection, fever for H1N1, electrical power inspection, landslide monitoring, gas leakage inspection, indoor pollution as well as motor fault analysis.

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Developing a street turbine for generative electricity

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Developing clean energy sources energy efficient system and similar ways of producing energy are gaining more and more importance and attention. Street pump has been conceptualized among for smart way of producing energy. This system uses piston pumps which are laid in the busy traffic road so as to utilize weight of vehicles to move the pistons inside the cylinders. Pumps operated in such way can be used to pump water and collect in a reservoir at certain height. The water in reservoir or tank can be used to generate electricity by the use of small turbine coupled with a generator and at the same time water can be repumped again. Electricity, thus produced, though in small quantity can be used to light, traffic light or street light or for other purpose which can be achieved by storing in batteries. It is convenient to do so, so as the rate of energy production is most likely be periodic and irregular. Producing electricity by using this system seem a little ambitious but it should be certainly be useful in pumping city drinking water which will save a lot of grid electricity.

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