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Review on the Types of Sensors Embedded in Smartphone

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Abstract: Sensors can be found in almost any application. It can be found in almost any application, where data from the real world is used to make decisions in many ways. Recent developments have transformed mobile phones from simple means of communication into fully integrated devices using new technologies and services. Most systems use sensors for successful automated data collection. Due to the use of sensors in mobile phones, today's mobile phones are equipped with many sensors and new sensors will be added in the future. There are many reasons for the integration of sensors and mobile devices, including ease of use, cost reduction and high productivity. This article provides an overview of mobile phone integration, sensor taxonomy, describes the number of sensors found and emerging in mobile phones, and highlights some of the limitations and recommendations to be made by researchers..

Keywords: Sensors

I. INTRODUCTION

Currently, almost all smartphone products are combined with multiple smartphones. For example, motion sensors are an important part of smartphone technology.Theymeasure the user's acceleration, motion, rotational speed, drift and twist vector values to understand the device's motion in real time. The electronic device isbased on gyroscopes that integrate several sensors into a single system. The gravity sensor measures the direction and strength of gravity, allowing smartphones to calculate the relative direction of objects in space. Navigation apps that track vehicle movement using gravity sensors. A curve vector sensor is also required to measure the orientation of the device.Thesesensors detect the water flow over the equipment. Applications that measure walking steps, such as exercise, rely on data collected by curve vector sensors, often combined with accelerometers and gyroscopes. The location sensor is responsible for reporting the physical location of the device.The technology uses geomagnetic sensors and accelerometers to determine the smartphone's position relative to the North Pole; It is also integrated with a GPS sensor to provide accurate location information. The position sensor can also be used to determine the distance of the user's head from the earpiece, allowing the phone to know the distance of the user and turn off the screen when inactive and when receiving a call. The smartphone's compass is powered by the magnetometer, a sensor that measures the magnetic field and allows the phone to determine north. Image sensors have become important in the design of new smartphones in recent years. Consumers are increasingly demanding better images for their camera phones.While the number of pixels is important for this, large image sizes can be important as they allow more light into the image and make the image look better. Finally, the smartphone integrates fourenvironmental sensors to measure humidity, light intensity, temperature and temperature. More precisely, light level sensors come in the form of ambient light sensors, which are photodetectors that measure the amount of light around your device. Together, these sensors prevent the phone from overheating and adjust the screen brightness.

II. SENSORS AND MOBILE PHONES

The continued growth of sensors as the main source of information on the Web is driving organizations to explore new ways to build wireless sensor networks and to capture, process, analyze and use data generated by sensors. Understanding the advantages of mobile sensors over wireless sensors and miniaturization of sensor technology,

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sensors can be used directly or via Bluetooth etc. It paves the way for its integration into mobile devices via wireless network technologies. Using the sensors in the mobile phone will turn the mobile phone into a measuring device.Usingmobile phones as sensors has many advantages over wireless sensor networks (Kansal et al., 2007). The mobile phone is always with the user, solving problems such as power management and network maintenance.Carrier or network administrators can ease most of the maintenance burden because end users can do hardware repair, software installation/uninstallation, maintenance and data server management etc. They are always interested in managing cell phones like Wireless sensor networks require manufacturing and are also expensive, thus increasing the overall cost of using the network.Obviously, using a mobile phone as a sensor would have a high economy of scale as it could be produced in high volumes and the total cost would exceed the millions. The mobile phone is not limited to a specific area or car, but the main area has its advantages. Cell phones can cover areas where traditional sensors are difficult to deploy. Cell phones will provide the coverage he needs most and will give results close to accurate analysis. Human user support for mobile phone can be used to increase the functionality of the application, for example, the user can understand the III by pointing the appropriate camera to take pictures of the product.

III. CELL PHONES SENSORS

Sensor classification schemes can range from very simple to complex. One way to classify them is to consider all their relevant characteristics, such as stimuli, properties, physical phenomena, information, mechanismsof transformation, and responses to practices. By definition, the sensor converts energy from one form to another. Therefore, another way to classify sensors is chemical, ionizing radiation, acoustic, electromagnetic, mechanical, thermal and optical, etc. according to the energy they perceive and change. There are several factors to consider when choosing a sensor, including accuracy, ambient, range, calibration, resolution, cost and repeatability.In general, sensors can be divided into: Analog and digital sensors: Analog sensors measure continuous parameters such as voltage, current, oil pressure, temperature, humidity, light, position, force, magnetic field and vibration, and generate regular signals. Values in the range of 0 to 5 volts, such as a cadmium sulfide battery, when digital sensors produce a non-uniform output signal, the results are very specific and incrementally increase when drawing, ladder-like representation, eg.Infrared detectors in robotics, etc. Digital sensors are more complex than analog sensors because the input is analog and the output is digital. Therefore, an analog-to-digital converter (ADC) must be part of the digital sensor. Embedded and external sensors: Embedded sensors are an essential part of the device and can be accessed using predefined connections such as:Passive sensors do not need power or batteries and are powered by electrical power sources, i.e. consumer products. RFID, etc. when energy sensors emit energy to the environment and then LiDAR etc. when you measure the response like. (Grauball et al., 2008). Active sensors require power or batteries to operate.

IV. CONCLUSION

Development continues and today's mobile phones are equipped with advanced processors, processing power and communication technologies that turn them into smartphones. In this article, we give detailed information about the importance of sensors in mobile phones, show the number of sensors that can be integrated into a mobile phone, and talk about some of the competitive and not-so-competitive technologies that should be considered when turning on the mobile phone. in a complete detection platform. Smartphones are equipped with various sensors that can be used to capture various types of data that can be used in various applications such as healthcare, home care and communication chat. The adoption of electronic devices in smartphones is growing rapidly and new and better sensors are expected to be incorporated into smartphones in the future. The rapid development of sensors in smartphones will lead to new applications and the creation of new applications and services.

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