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Framework for Developing Cloud enabled Applications for IoT

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In this paper we are proposing an Application Programming Interface (API) framework that can integrate cloud computing functionalities with Sensors to provide the on-demand computational resources, dynamic storage allocation, and database for developing cloud enabled application for Internet of Things (IoT). The functions of IoT, ie internetworking of physical devices, vehicles, buildings and other items—embedded with electronics, software, sensors, actuators, and network connectivity that enable these objects to collect and exchange data will be taken care by this API. Since these are embedded devices have limited CPU, memory and power resources. Cloud computing technology will be used for design and development of this Architecture and its APIs. Since the IoT and Cloud computing domains are an emerging area there will undoubtedly be a surge in cloud centric applications with Sensors. This API framework is designed to interface with sensor networks to transfer the required data to centralized Cloud Storage. Then the Cloud Storage serves as Database as a Service to any Cloud Applications, Mobile Apps or any other web applications.

For example, the proposed API framework will interface with Ubi-Sense sensor board developed with Air pollution and humidity sensor that supports digital output display, light sensors with infrared reacts and approximates person eyes, smoke sensor and buzzer to identify any abnormity in the above parameters. The well-known drawbacks of Sensor data such as lower visibility, non-accessibility will be addressed through this work. The Cloud computing functionalities Elasticity, Scalability, Optimal usage of resources, Minimal maintenance cost will be readily available for the IoT applications.

The advantage of using Sensors and its data are reasonable cost, power capacity and small size. Some of the Applications of Sensors are climate monitoring, battle field surveillance, air pollution monitoring, habitat monitoring, tactical surveillance, distributed computing, vehicular network, spying, etc can be supported using this framework. The applications of this work are measuring the pollution level in the office premise, temperature monitoring in the data center. The information generated from the sensor will be stored in the cloud storage. The data of sensor information will be sent as input to the web application or third party applications. The sensor information will be archived in hierarchical manner for later usage and from API will provide as Database as a Service.

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