Research Proposal

On

Recognizing User Context in IoT based Smart Living Room using Hybrid Deep Neural Network Technique.

Submitted by:

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1. Introduction and Problem Definition

Technological advances in devices, sensors, wireless communication and internet have led increasingly to the integration of the sensors, devices and internet with users and physical environment leading to Internet of Things (IoT). **IoT** has made a global impact on connecting billions of objects through internet, and they are built into the system and constituents which enable simple deployment, dynamic (re) configuration, re-purposing of technology and information integration in a service-oriented way. The impact of IoT becomes more meaningful and useful if and only if IoT based applications provides user context based services.

A per the literature survey made most of the researchers and standard dictionaries define context as: "*The information that describes the situation or circumstances of an entity in which an event occurs*". Dey and Abowd have also confirmed this by defining context as: "*Any information that can be used to characterize the situation of an entity*". An entity is a person, a place or a physical or computational object that is considered relevant to the interaction between a user and an application, including the user and the application themselves. The context can be categorized into different types, based on the information they carry like: Computing Context, Network Context, User Context, Physical Context, Time Context, Sensor Context and Device Context.

To provide user context based services IoT applications must be enabled with a mechanism or technique to recognize user context efficiently with high accuracy. According to a survey made by an author in a paper [1], it was mentioned that the unsupervised learning method i.e. the clustering method has been employed to capture user contexts by dynamic profiling. The demand for use of variety of sensors is also increasing as it helps in acquiring user contextual data faster and cheaper.

In this research, as the focus is on the technologies that is required to recognize user context in IoT based Smart Living Room, the accuracy and efficiency of the data captured from the sensors need to be improved better than the existing methods/techniques. In order to design the efficient and accurate user context recognizing system, the Machine learning technique

like ***Hybrid Deep Neural Network technique*** will be analyzed and finally a suitable algorithm will be derived which can be implemented. Recognizing the user context is a great challenge and so, at the end of this research a suitable technique will be derived which can be used for the future applications.

2. References

[1]   Charith Perera, Arkady Zaslavsky, Peter Christen and Dimitrios Georgakopoulos, "Context Aware Computing for The Internet of Things: A Survey", IEEE COMMUNICATIONS SURVEYS & TUTORIALS, VOL. 16, NO. 1,FIRST QUARTER 2014.