Ubiquitous Computing (CS60055)

Project Discussion

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➢Evaluation Strategy

➢Submission Strategy

➢Discussion of Sample Project Ideas

Project Evaluation Strategy

➢ Evaluation according to ---project type and complexity

➢ Progress track every after two weeks

➢ Progress track will comprise a small presentation about what is done till now and what needs to be done.

➢ Marks based on performance

Project Submission Strategy

➢ Slide presentation

➢ Execution of the project

Discussion about Sample Project Ideas

Location-Based Services on Mobile Phones: Minimizing Power Consumption

Building low-power location-based services that can run for hours on mobile phones is challenging. The students will propose power conservation methods to implement location-based sevices.

A temporal spatial Real-Time charging for wearable Devices

Wearable devices need to charge after regular interval of time. For seamless operation of these devices it is necessary to charge these devices in real-time using WI-FI signals.

Discussion about Sample Project Ideas

Disease Severity Detection System using Cloud

In this project, students can select any disease topic. The symptoms of the disease will be captured in real time and send to the cloud. In cloud, there will be disease severity detection processing module which identifies the severity of the disease and informs the patient.

Human Behaviour Intervention for Predicting Depression and further Recommending Medication and Support.

Continuous monitoring of human behaviour data helps in monitoring the stress level and further, helps in predicting depression. The interaction of smart devices with healthcare centres using cloud computing further helps in recommending medication and support.

Discussion about Sample Project Ideas

Road Surface Monitoring System

In this project, students will capture road surface information using the IoT and send to the cloud or fog. The pre-trained machine learning module analyzes the road surface and sends a notification.

Data Offloading or Local Processing Decision System for Processing Health Data using Cloud

In this project a wearable devices or any computer will collect health monitoring data and fed into a decision module located in the Raspberry Pi. The module based on types of processing requirements will decide two cases ---

The entire data have to be sent into the cloud for processing or not.

Whether both local processing and processing in the cloud are required or not.

Discussion about Sample Project Ideas

Energy Efficient Interaction Between Humans and Computers

IoT devices are energy constrained devices. Utilizing IoT-Cloud synergy for the interaction between the devices and the humans

Context-aware and Big Data Analytics for Industrial IoT

The goal of the project is building reliable industrial IoT networks, automating the processing of big variety, volume, and velocity industrial IoT data streams, and offering big data insights with centralized or distributed solutions. Therefore, we develop adaptive models-based decision support and recommendation tools that enable the automated control of the system with processing big industrial IoT data.

Discussion about Sample Project Ideas

<u>Context-awareness for Elderly Care</u>

The objective of the project is to take advantage of smartphones and wearables' sensing capabilities to fight loneliness/social isolation, help reduce caregivers' workload and thus elderly care costs, by means of context-awareness.

Specifically, by capturing fine- grained data of non-critical, non-intrusive health-related physiological measurements, e.g., skin temperature to detect fever and sleeping quantity; accelerometer to detect physical activity and sleep quality; skin conductance to detect pain and stress; and Bluetooth Low-Energy to detect the proximity of others and social interaction, the students collect invaluable data on different wellbeing and social conditions, useful to enable context-aware elderly-oriented applications and services.

Discussion about Sample Project Ideas

Personalized Retail Experiences:

Create a platform that tailors in-store shopping experiences based on individual customer preferences, past purchases, and online behaviors. The system can provide real-time product recommendations and discounts as customers move through the store.

Discussion about Sample Project Ideas

Environmental Monitoring Network:

Develop a network of sensors placed in urban areas to monitor air quality, noise levels, temperature, and other environmental factors in real time. The collected data can be used to generate maps, visualize trends, and inform urban planning decisions.

Discussion about Sample Project Ideas

Smart Transportation System:

Build a comprehensive transportation system that integrates autonomous vehicles, public transit, and shared mobility services. The system can optimize routes, schedules, and modes of transportation to reduce congestion and improve efficiency.

Discussion about Sample Project Ideas

Augmented Reality Tourism Guide:

Create an augmented reality (AR) application that offers tourists interactive information and historical context about landmarks as they explore a city. The app can use location-based AR to provide a seamless and informative experience.

Discussion about Sample Project Ideas

Smart Agriculture:

Develop a platform for precision agriculture that uses sensors, drones, and other devices to monitor crop health, soil conditions, and weather patterns. Farmers can receive real-time insights and recommendations to optimize crop yield and resource usage.

Thank You!!