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**MASENO UNIVERSITY**

**SCHOOL OF COMPUTING AND INFORMATICS**

**DEPARTMENT OF COMPUTER SCIENCE**

UNIT: **HUMAN COMPUTER INTERACTION**

CODE: **CCS 302**

TASK: **ASSIGNMENT**

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SIGN: ………………………Explain the following concepts in regard to interface design:

1. **Multitouch interfaces**

Human/computer interaction has improved a great deal with introduction of multitouch interfaces. These provide expressive gesture control and fluid multi-user collaboration in interactions with computer systems.

The technologies powering these interfaces include:

* Optical design which uses image processing to determine the locations of interactions with the surface.
* Frustrated Total Internal Reflection (FTIR) and Diffused Illumination (DI) hardware implementations.
* Laser-light plane and diffused-screen illumination.
* Infrared illumination.

1. **Kinetic user interfaces**

These interfaces facilitate portable computing with use of motion sensors for location awareness and motion tracking as primary means of user input to computer systems. One application of kinetic user interfaces is able to provide customized services to users based on their current geographical location. For example, smartphone applications are capable of reading GPS coordinates and offering recommendations such as nearby restaurants to the user.

1. **Organic user interfaces**

These interfaces can sense and dynamically adapt to shape with their flexible display which works as both the input and output device. They can display information on their surface or communicate this information just with their shape. They can further track multitouch input, bi-manual gestures and other physical analog input.

Organic user interfaces offer the following advantages:

* No separation between display and input device.
* More natural possibilities for input.
* Multi-modal output.
* Dynamic affordances.

1. **Tangible user interfaces**

These interfaces are closely related to organic user interfaces but contrasts in that tangible user interfaces use physical objects as devices for input. They usually do not display information on their surface and cannot track multitouch input.

In other words, a tangible user interface object might just be the physical representation of a digital object, which is manipulated the way the physical counterpart is manipulated.

Tangible user interfaces also lack some of the interactive functionalities of the organic user interfaces such as multitouch user input.

1. **Multisensor user interfaces**

Is increasingly being adopted for portable computing where devices have awareness of their environment and situation as context. The context originates from the physical surroundings of the device and is captured by sensors located on the device. Such sensors include position, camera, audio, video, bio, motion, orientation, light and temperature. The data from the sensors are combined to get a more general characterization of the device situation.

The context is used to improve user interaction and to support new types of applications and devices.

1. **Ubiquitous user interfaces**

Provides permanent access to information and computing resources through user interfaces accessible to every human in many different situations and contexts. This is achieved by the use of everywhere displays, spatial and temporal mappings between real world and virtual world among other techniques.

**References**

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