Xi'an Jiaotong-Liverpool University
西交利物浦大学

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2020/2021 SEMESTER TWO

Group Project - Design

Human-Centric Computing

INSTRUCTIONS TO CANDIDATES

- This project accounts for 10% of the final marks.
- Full mark is 100.

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CPT208 Human-Centric Computing
Group project: Novel Interaction Project

In this assignment you need to design an interactive visualization system/technique.

Introduction:

Spatial data exploration tasks include:
- 3D manipulation (rotation, translation and scaling)
- Navigation
- Selection
- Annotation
- 3D visualization widgets manipulation.

Spatial interaction techniques are the techniques that are based on:
- Touch sensitive devices
- Tangible devices
- Mid-air gesture-based interaction devices
- Hybrid interaction techniques

Typical tangible devices are smartphones and tablets, in which gyroscope is presented to sense angular rotational velocity and acceleration.

Hybrid interaction paradigm refers to interaction techniques that combine touch/pen, tangible, and/or mid-air aspects. For instance, the most common hybrid paradigms for annotation and selection combine touch and tangible interaction. For example, touch input can be used to sketch annotations or selection marks while tangible input is used to specify a 3D location or extrude 2D selections into 3D space.

Task:

In this project, you need to choose one spatial interaction technique and one or two spatial data exploration tasks. You need to design an interactive system / interaction technique which uses the spatial interaction devices to complete the data exploration task. For instance, you may:
1. explore data selection and annotation tasks by using hybrid interaction techniques
2. explore navigation task by using tangible devices, which inherently offer 6 integrated DOF (three rotations and three translations)

Please note that **you don't need to implement the new system/technique**, but you will go through the whole development process. You are also expected to provide suggestions how to implement it (what programming language can be used to implement it).

Marking:

Your project will be evaluated according to:

- Originality
- Innovation
- Choice/appropriateness of designs
- Quality of the presentations

Related work:

In order to help you to learn the spatial interaction techniques and spatial data exploration, please find some related work here: https://box.xjtlu.edu.cn/d/d50c407fe6a94086b296/ You can first have a check which topic you like more and discuss the idea with your group members. After the group makes a decision, then you may need to find more related work.

Coursework 1- Presentations (Full mark is 100, which accounts for 10% of the final marks)

- ***Presentation one*** (State of the Art, Identify the limitations of the existing work, Propose your idea of enhancement) – (20 points). Time: **March 19 (week 3)**
- ***Presentation two*** (Prototyping) – (20 points). Time: **April 2 (week 5)**
- ***Presentation three*** (Design principles) – (20 points). Time: **April 23 (week 8)**
- ***Presentation four*** (visualization and interaction) – (20 points). Time: **May 7 (week 10)**
- ***Presentation five*** (evaluation plan) – (20 points). Time: **May 21 (week 12)**