Aptitude Test

3D User Interfaces in Virtual Environments

Human-Computer Interaction – University of Würzburg

1 Software and Hardware Requirements

- Unity 2018.3.x
- Programming language C#
- Oculus Rift + Touch
- If no HMD is available to you, use the VRTK Plugin's VR Simulator

2 Application Requirements

1. User can move object**s** (i.e. change location & rotation) using the *Virtual Hand* technique.
2. User can move freely inside the environment using the *Jumping* technique.
3. User can receive information about the possible interactions supported by an object.
4. User can duplicate or delete objects.
5. User can change the scale of objects.
6. User can interact with at least one virtual device in the room
   e.g. with a lamp.
7. User can display a *help* menu to know how to use the interactions techniques.
8. User receive constant visual and audio feedback on the state of the interaction
   e.g. success, failure, in progress, ...
9. The visual and audio aesthetic does not impede the interaction,
   e.g., the ray, virtual hand or text are clearly visible, not too bright, too dark, too thin, ...
10. The average framerate is above 80 Hz at any point in the environment.
11. The resulting prototype is functional (e.g. running) & contains instructions for setup and execution.

3 Material

- Unity, `https://unity.com`
  - Manual, `https://docs.unity3d.com/Manual/index.html`
  - Tutorials, `https://unity3d.com/learn/tutorials`
- 3D user interfaces: theory and practice (LaViola Jr et al., 2017)
- Master course 3DUI materials: Uni Würzburg course management system (contact us for access)

References

LaViola Jr, Joseph J et al. (2017). *3D user interfaces: theory and practice*. Addison-Wesley Professional.