Virtual Reality Telemedicine Platform

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Hi, developers. We are **frustrated** with displays not showing all the information we need.

Why not use more monitors? They are **too small**. It is cumbersome to switch back and forth between screens.

Let’s use **virtual reality**! It will give you more space to display your charts and graphs and to work with your applications.

Virtual reality can provide **simple and intuitive** interaction with hand gestures, allowing you to be more **productive**.

**By applying Virtual Reality** We can provide doctors with a more productive & accessible interaction with their applications.

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**Design Principle I – Spaces**

We have developed three spaces for different purposes.
- In the main **working space**, you interact with all your applications.
- In the **side space**, you have access to widgets.
- In the fixed **eye space** you can monitor important information.

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**Design Principle II – Interaction**

Good interaction experience boosts productivity.
- **Intuitive and simple hand gestures**: Push to minimize, pull to reopen.
- **Controllers and physical buttons**: More options and allows precise actions. Bring up the menu by pressing a button.

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**Design Principle III – Extensibility**

Our project is a platform for incorporating **VR native applications, Windows- or web-based applications** in one VR setting. With our API, traditional apps can also be extended to support more VR features. e.g., creating a 3D model from a traditional Windows app.

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**Innovations**

- **Three spaces** make use of VR to provide more space for users.
- **Gestures** allow users to efficiently interact with different kinds of data.
- **Very portable and extensible**. More apps can be easily migrated. It can also be used for non-medical purposes.

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**Future developments**

- Graphics can be improved for a better user experience.
- More medical-specific native applications can be implemented.
- Rendering 3D models for MRI/CT scans can be added.

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**Select VR Native Apps**

- Real time video streaming
- Medical encounter notes
- MRI scan image viewer
- Electronic medical record visualization
- Vitals monitor
- Widgets

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**Tools, Libraries, and Platforms**

- WebRTC
- VRTK
- Chromium
- Firebase
- Oculus

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**Figure I**

- An overview of the working space (right) and side space (left).

**Figure II**

- The user is using a pull gesture to reopen all minimized apps in working space.
- The user is grabbing and resizing the Intake Form app.
- There is a hand menu to open apps.

**Figure III**

- Some apps are implemented in Unity to maximize their performance and fully utilize VR features.
- Familiar Windows apps, such as the explorer, can run in the interface.
- Web-based apps utilize HTML and CSS features to simplify and speed up app implementation process.

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**Using WebRTC to give you more space to display hand gestures, allowing you to interact with different scan images with a mouse on a flat screen.**

**Let’s use virtual reality!** It will give you more space to display your charts and graphs and to work with your applications.

**Virtual reality can provide simple and intuitive interaction with hand gestures, allowing you to be more productive.**

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**Why not use more monitors?**

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**The data** we deal with is also very complicated. It is difficult to interact with different scan images with a mouse on a flat screen.

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**Virtual reality can provide simple and intuitive interaction with hand gestures, allowing you to be more productive.**