Visualization of telemetry data with holographic glasses

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Abstract

This work aims to develop a practical application for holographic smartglasses HoloLens. Final program is going to visualize telemetric data, such as sensory data, PWM signals, code variables etc., from connected robots in a way that user can see the physical robot and its data simultaneously. HoloLens are fully untethered device, thus not impeding the ability to move of its users.

Application is on recommendation from Microsoft developed in game engine Unity 3D, then exported into Visual Studio and lastly installed as UWP C# onto HoloLens. Communication is based on Wi-Fi technology with possible extension to Bluetooth in subsequent development. Connected robots (Sunfounder Smart Video Car and Hexapod in demo) are not constrained in their programming language as long as they support TCP/IP sockets and JSON serialization.

Aquired data is presented on floating panels tracking real-world marker placed on targeted robot coming in two configurations. Default configuration shows up to three entries and the second up to five on both side panels.

Acknowledgment