Researchers at the University of South Florida have invented a novel cloud-based streaming platform that integrates the sense of touch along with visual and audio feedback in online applications to provide users with the ability to see, hear, touch, and interact with objects in the cloud in real time.

The transmission of visual images (static and dynamic), text, and sound over packet-switched networks have been the subject of significant research and development efforts over the past several years. However, the transmission of other types of sensory data, including haptic feedback data, has not yet been thoroughly explored.

In an effort to realize haptic feedback systems in real time, USF inventors have invented a technique/platform to facilitate haptic based simulations via packet switched networks. The system consists of a cloud based streaming platform that comprises three high level components including a simulation engine, a haptic communication and control system, and a visualization system. This design enables performance of computationally-intensive tasks in the cloud, thus enabling users to leverage low-cost, off-the-shelf hardware.

This invention enables access to low-cost haptic-based simulation training virtually anywhere and at anytime. It also enables highly realistic simulations to be deployed on low-cost/handheld devices. The vast scope of this invention makes it applicable to varied applications in the fields such as medical and military simulations, cloud gaming, product marketing and engineering design.

**ADVANTAGES:**

- Accurate and efficient real-time visualization and haptic feedback
- Stable high performance over the cloud
- Low latency communication of visual, audio and haptic data

**Cloud Based Streaming Platform for Haptic Feedback Simulation**

**Left—Set up of the Cloud-Based Haptic System**

**Right—Haptic Interaction with Cloud Based Anatomical Model**

Tech ID # 13A050  US Patent # 9,501,946