

# Straw-like User Interface

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## 1 Introduction

An evolutionary interface system allows users to virtually experience the sensations of drinking. The sensations are created by referencing sample data of actual pressures, vibrations, and sounds produced by drinking from an ordinary straw attached to the system.

Our lips and mouths are some of the most sensitive parts of the human body, as sensitive as fingers. For this reason, research on presenting various applications to this region of the body will be explored by many researchers in the near future. This project proposes an innovative methodology for presenting stimulation to the mouth and lips.

This project is the world's first attempt to present virtual drinking sensations to the mouth and lips. Because this body region is so highly sensitive, it is possible to develop many unique interfaces and extend their applications into several research fields, including interactive arts and entertainment.



Figure1. Scene of Experience

## 2 Exposition

The innovative aspects of the technology are as follow:

1. Presentation of the virtual drinking sensation

The system transmits pressure changes to the straw, which applies

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vibrations to the mouth. The pressure changes are created by a valve in the interface. If the valve is closed, the pressure increases. If the valve is open, the pressure decreases. Appropriate control of the valve produce various changes in pressure. Also, when the speaker inside the interface vibrates, the straw attached to it receives the vibration and transmit it to the lips.

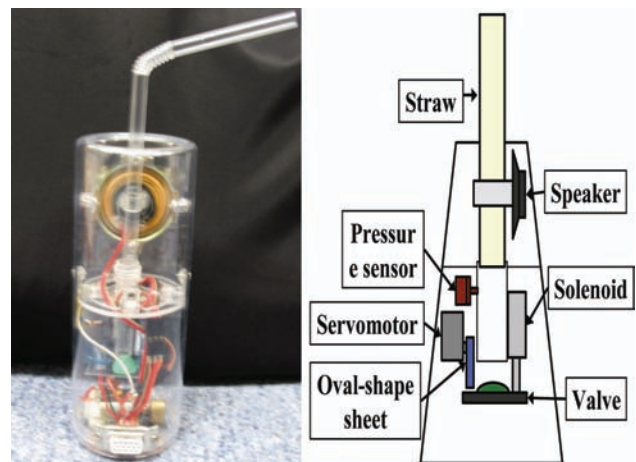


Figure2. Overview of Straw-like User Interface

## 2. Recording information on drinking

Pressure changes and sounds from real-world drinking experiences are recorded as data and installed in the interface to reproduce virtual drinking sensations. A pressure sensor installed near the straw gathers pressure values, and a small microphone acquires audio data.

## 3 Conclusion

With this interface, users can experience the happiness and fun associated with various drinking sensations. Future versions will be miniaturized, to about the size of an ordinary straw, so the interface can be carried in a pocket, and users can experience virtual drinking fun anywhere they go.

Providing wider varieties of information to the mouth and lips will extend development of useful interfaces to many areas. For example, it is possible to add virtual sensations to hands or legs while using this interface, which could create a new way of playing games. With telecommunication technology, this interface could enable distance communication via touch. It could also augment sense perception among the elderly and physically challenged. And it could support research and development on new beverages.

Eventually, the interface will be extended beyond the virtual drinking sensation to provide wider varieties of information to the mouth and lips.