International Olfactory Displays Workshop 2024

Interactive Smellscape

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This research aims to enhance cognitive function by developing content that integrates the presentation of smells via an olfactory display with Virtual Reality experiences. We have created an olfactory game in which players seek out particular smells embedded within a virtual landscape. The intention is that players will learn to recognize each smell and be able to identify it in comparison with other smells as the game proceeds. This has been created to assist people with olfactory impairments to relearn how to smell. Following on from previous research exploring smell cognition in virtual game environments (1) *Interactive Smellscape* is being developed and tested for use by a range of players, including the elderly (2).

A player is given two tasks. One is to find the source of a particular smell which emanates from a Japanese lantern that they have to find in the landscape, with proximity indicated by the smell intensity. The other task is to memorize the smell so that, when presented with 3 smell options, they are able to select the correct smell.

The olfactory display (Fig.1) contains 12 different liquid smell samples, attached to a solenoid valve assembly that can be accurately programmed to dispense each smell in relation to the player's actions within the virtual landscape. A tube connects this machine to a Head Mounted Display so players can experience the different smells as they play the game (Fig.2).

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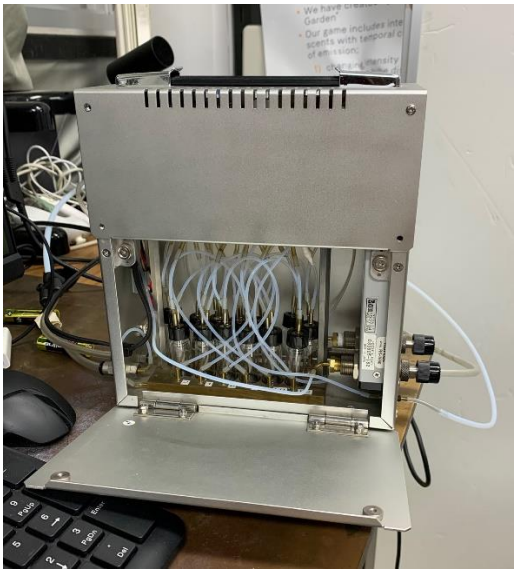

Fig.1 Olfactory Display device.

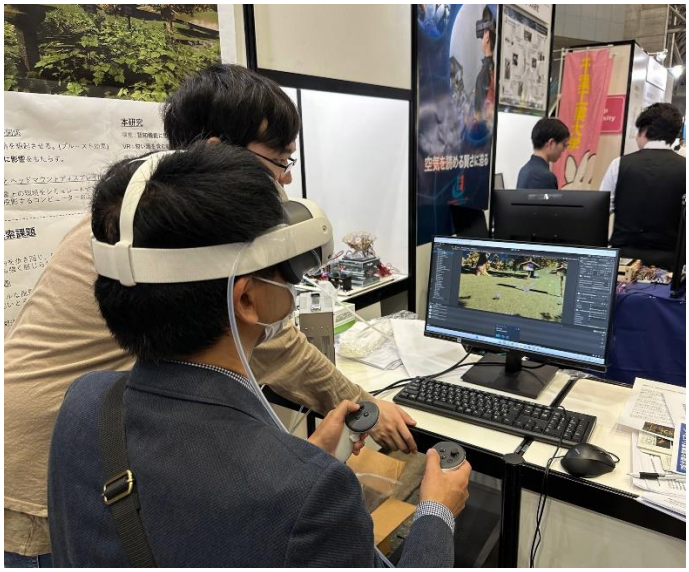

Fig. 2 Playing Interactive Smellscape at CEATEC 2023

1. *Aromatic Garden* https://dl.acm.org/doi/10.1145/3476122.3484840
2. In collaboration with psychologists Prof K Yamamoto and Prof T Kobayashi.