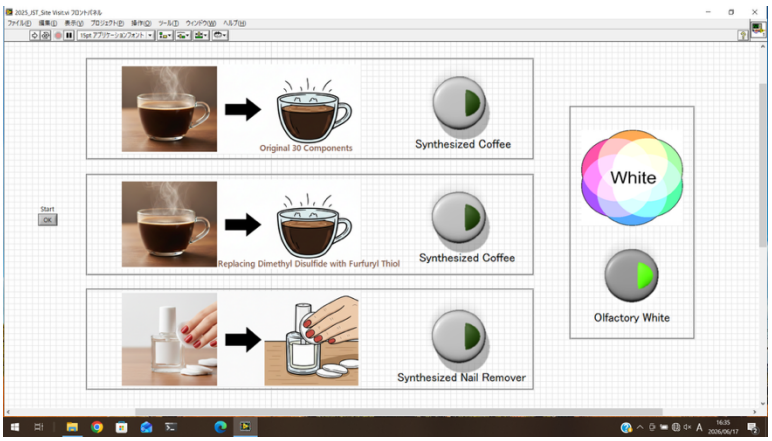
Presenting Synthesized Approximated Smells Using Subtractive Mixing from Olfactory White

Hiroshi Ishida[1], Yuki Yoshida[1], Uta Nakashima[1], and Haruka Matsukura[2]

[1]Graduate School of Advanced Interdisciplinary Science,
Tokyo University of Agriculture and Technology, Tokyo, Japan
[2]Graduate School of Informatics and Engineering,
The University of Electro-Communications, Tokyo, Japan
h_ishida@cc.tuat.ac.jp

Here we demonstrate subtractive odor synthesis [1] that we have proposed for generating various smells in virtual reality applications using only a limited number of chemical components. A mixture of about 30 diversely different chemical vapors approaches a certain smell, as if the mixture of different colors always approaches white in vision. This phenomenon is called “olfactory white” [2], and suggests that a wide range of odors can be generated by subtracting some components from the olfactory white. When the target smell is given, its approximated smell can be synthesized by adjusting the mixing ratio of the 30 components so that the response pattern of an electronic nose (e-nose) is matched. In the demonstration, smells of coffee and nail polish remover synthesized by the proposed method are presented so that the visitors can compare the smells with their original targets.



Screen shot of the demonstration.

Acknowledgment

This work was supported by JST Mirai Program (Grant Number JPMJMI25H1) and JSPS KAKENHI (Grant Numbers 25K22815 and 26K07437).

References

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[2] T. Weiss, et al., *Proc. Natl. Acad. Sci. U.S.A.*, vol. 109, no. 49, pp. 19959–19964, 2012.