

Building Platform for Digital Scent Technology

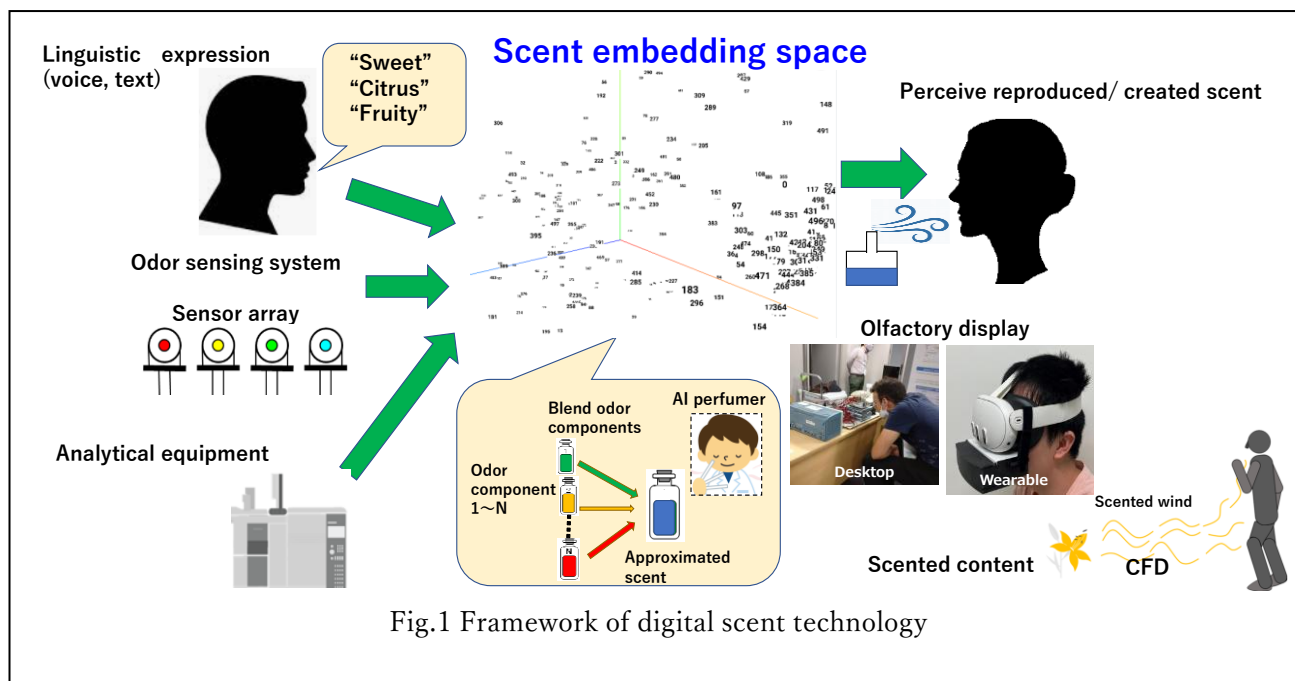
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While we face visual and auditory information at a computer or a smartphone in daily life, we cannot deal with olfactory information in cyber space. Our team is working on the project (JST Mirai program) to realize digital scent technology [1]. It consists of odor reproduction, odor sensing, algorithmic scent creation and scent presentation techniques [2]. Its overview is shown in Fig.1.

Olfactory data from language, sensors and analytical equipment is processed, followed by generating scent embedding space. Linguistic expression is processed by LLM, whereas the sensing data are processed to extract a small set of odor components to approximate scents. Then, approximated odor is reproduced using multiple odor components. Otherwise, intended scent is generated using algorithmic method based on the information from scent embeddings. People can perceive the reproduced or created scent through an olfactory display, i.e., scent presentation device. Then, we make scented contents everyone can enjoy. Those contents include movies, games and simulators with scents. The technologies we have so far developed are presented in this workshop.



References

- [1] https://www.jst.go.jp/mirai/jp/uploads/saitaku2025/JPMJMI25H1_summary.pdf
- [2] T.Nakamoto, Ed., Digital technologies in olfaction, Elsevier, 2025.