

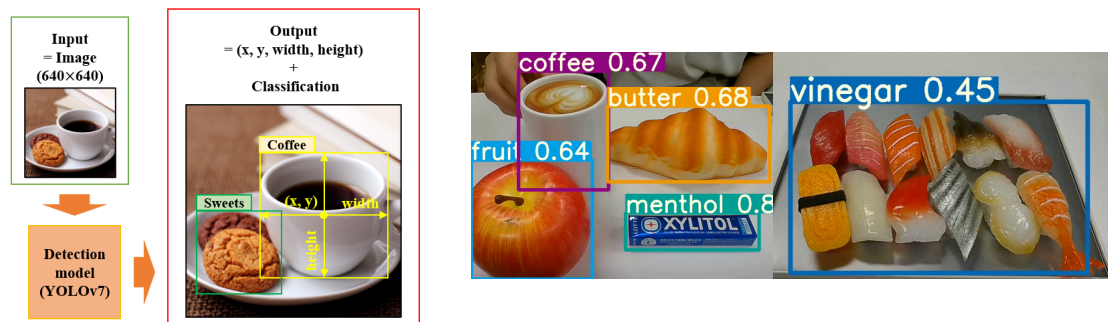
Detection of Odor-Related Objects in Images:

Automatic Annotation of Scents in Images

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Here I report on our attempts to detect odor-related objects in images and videos using specifically trained AI. Olfactory displays that can deliver appropriate scents to a user is a long-awaited technology to elevate the virtual reality experience to a higher level. To enhance the sense of immersion, it is desirable to change scents with the transition of the scenes of a movie. However, it can be a tedious work to go through a movie and annotate each scene with the scents that should be presented in the scene. Therefore, we have proposed to use AI object detection technologies to automate this annotation process [1]. We have so far tried to detect 12 classes of odor-related objects selected from frequently encountered scents in Japanese daily lives. More than 6000 images have been collected to train YOLOv7 [2] detection model and evaluate its performance. The images showing coffee, flowers, fruits, sweets, menthol, incense, and woods were collected using image search. For curry, vinegar, garlic, soy sauce, and butter smells, images of foods containing those ingredients were collected. The accuracy of 66% has been obtained as a result. We are currently trying to utilize subtitles of the videos to get additional information and improve the accuracy of determining scents to be presented.



(Left) Schematic diagram showing the method for detecting odor-related objects [1]. (Right) Examples of odor-related object detection. A croissant was detected as an object with a buttery smell, and sushi was detected as objects with a vinegary smell.

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References

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- [2] C.-Y. Wang, A. Bochkovskiy, H.-Y. M. Liao, *arXiv*, Art. no. 2207.02696, 2022.