

Learning Food-arrangement Policies from Raw Images with Generative Adversarial Imitation Learning*

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Food arrangement on a plate is one of the most challenging kitchen tasks for automation with robots. In particular, the food-arrangement planning problem has not been much studied to our knowledge, maybe due to the difficulty in its quantitative evaluation. In this talk, I introduce our attempt on the food-arrangement planning problem by an imitation learning approach from expert demonstrations. In particular, our approach employs a Generative Adversarial Imitation Learning framework, which allows an agent to learn near-optimal behaviors from a few expert demonstrations and self explorations without an explicit reward function. For evaluation, we developed a food-arrangement simulator for the Japanese cuisine “Tempura” with 3D-scanned tempura ingredients and conducted experiments for its performance evaluation. The experimental results demonstrate that our method can learn expert-like arrangement policies from bird-view raw images of plates without manually designing a reward function or requiring a massive number of expert demonstration data.

Website of the forum:

<https://sites.google.com/view/robotcook20/>

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