

Introduction to Forum on Robotic Food Manipulation Challenge*

Akihiko Yamaguchi, Oliver Kroemer, Tapomayukh Bhattacharjee, and Shinichi Hirai, *Member, IEEE*

This forum focuses on robotic technologies for food manipulation, especially cooking. Robotics and AI solutions for food are becoming a trend these days. Some companies, including industry leaders and startups, are working in this field. There are also increasing social demands, as aging societies will need assistive robots to support people's quality of life. However, food manipulation is still a challenging problem in robotics since we need to unify a number of different technologies.

Food manipulation involves many challenging problems in robotics. For example, manipulation of non-rigid objects (vegetables, fruits, meats, liquids, powders, etc.), tool use, control of food state (raw/overcooked, shape, viscosity, content of salt/sugar/acidity, etc.), and adaptation to personalized taste. It requires a wide range of technologies, such as motion planning, machine learning, computer vision, robot hands, and non-visual sensing. In this forum, we will discuss the state of the art and how to unify these technologies to achieve applications such as cooking, industrial food manipulation, and assistive robots.

In this forum, we discuss designing food manipulation challenge, which is a competition of robotic food manipulation. As unifying many different technologies is important in robotic food manipulation, we believe that having competitions is a promising approach to gather researchers from different fields, share ideas to solve problems, and collaborate with each other toward better robotic food manipulation. This forum is for brainstorming such competitions.

Website of the forum:

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

*Akihiko Yamaguchi is with Tohoku University.
Oliver Kroemer is with Carnegie Mellon University.
Tapomayukh Bhattacharjee is with University of Washington.
Shinichi Hirai is with Ritsumeikan University.