

Title: Robot Gourmet Chef at Home for Everyone

Abstract: Good food is vital to our mental and physical health. A gourmet chef can prepare food healthily, boosting its flavor to encourage consuming more vegetables, reduce sodium and fat intake, and cut calories; however, not everyone can master the art of cooking or afford a gourmet chef. Can robots obtain a gourmet chef's cooking knowledge and capabilities to serve us quality food at home every day?

In this talk, I will first introduce how to use the functional object-oriented network (FOON) to guide robots to perform various long-horizon cooking tasks. Then, I will present our new motion generator that can learn common cooking-manipulation skills such as accurately pouring liquid and solids and mixing different ingredients. In the end, I will show our latest work on developing novel multi-object-grasping approaches for robots to reach human-level efficiency.

Bio:

Yu Sun is a Professor in the Department of Computer Science and Engineering at the University of South Florida (Assistant Professor 2009-2015, Associate Professor 2015-2020, Associate Chair of Graduate Affairs 2018-2020). He was a Visiting Associate Professor at Stanford University from 2016 to 2017. He received his Ph.D. degree in Computer Science from the University of Utah in 2007. Then he had his Postdoctoral training at Mitsubishi Electric Research Laboratories (MERL), Cambridge, MA (2007-2008) and the University of Utah (2008-2009). His main research area is robotic grasping and manipulation. He initiated the IEEE RAS Technical Committee on Robotic Hands, Grasping, and Manipulation and served as its first co-Chair. He has published numerous papers in robotics, intelligent systems, virtual reality, and medical applications and received 15 U.S. patents and a 2018 USF Excellence in Innovation Award. He has also served on several editorial boards as an Associate Editor and Editor, including IEEE Transactions on Robotics, IEEE Robotics and Automation Letters (RA-L), ICRA, and IROS.