

NEWS | FUTURE OUTLOOK

Chef Robotics Develops Bi-Manual Physical AI System to Automate Complex Food Prep-Table Assembly

Powered by Chef's Food Foundation Model, New Dual-Arm Robot Targets High-Complexity Meal Preparation Across Restaurants, Catering, Healthcare, Hospitality and Institutional Foodservice

By **Ankit Kankar** | September 13, 2026

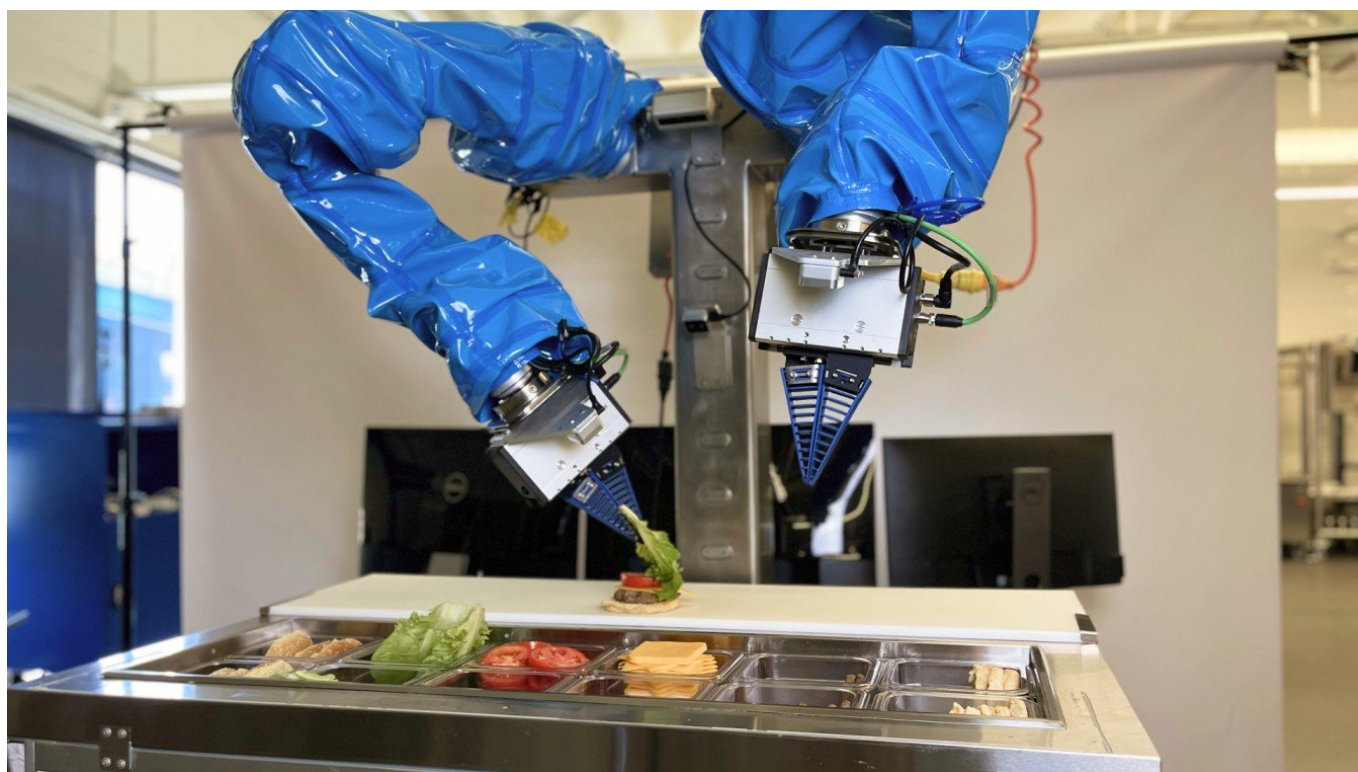


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[Chef Robotics](#), a leader in physical AI for the food industry, announced the development of a bi-manual physical AI system for prep table food assembly. While today's Chef robots handle high-volume meal assembly on food manufacturing conveyor lines, this new bi-manual physical AI system will focus on lower-volume, higher-complexity prep-table-based assembly for industries such as ghost kitchens, fast-casual restaurants, airline catering, schools, hospitals, military, prisons, stadiums, corporate dining, and hotels.

With the advent of physical AI and imitation learning, Chef's AI team is developing a new physical AI system designed to handle meal assembly tasks on prep tables, such as back-of-house burger or burrito assembly. These tasks are lower-volume but higher-complexity than food manufacturing on conveyor lines because a single worker (or robot) must assemble the entire meal, rather than breaking the process down into separate workstations for each ingredient.

To perform higher-complexity tasks, the new system will use two robotic arms, enabling bi-manual control. It will be able to perform coordinated, dexterous manipulation comparable to that of human arms and hands. The system's end effectors will be flexible enough to pick up different food ingredients and utensils.

Powered by Chef's Food Foundation Model (FFM)

The new physical AI system will be powered by Chef's Food Foundation Model (FFM), which learns faster and adapts to a wider range of use cases than traditional robotic systems.

Off-the-shelf vision-language-action models (VLAs) and physical AI models aren't sufficient for food manipulation. Most VLAs and physical AI models are trained on rigid-body manipulation, but food manipulation involves highly variable, deformable materials (e.g., wet, sticky, irregular items). This requires Chef's AI models to generalize across a broad range of physical states and interactions.

Instead of requiring separate models for tasks such as picking and placing food, detecting trays, compartments, and inserts, and handling scoopable or discrete ingredients, the FFM supports all of these capabilities through a single "foundational" AI model. It can also be extended to new tasks more efficiently and with improved performance.

Rather than being programmed, the FFM learns from demonstration (imitation learning) to perform specific tasks like [assembling a burger](#) or [building a burrito bowl](#). It also generalizes across different robotic hardware platforms by learning task representations that transfer across hardware

embodiments (e.g., systems with different kinematics, end effectors, and configurations). In that sense, Chef is building the physical AI layer for food.

The FFM is expected to unlock additional capabilities over time. For example, it may support zero-shot or few-shot ingredient onboarding, adapting to new ingredients with minimal training. The model will also self-improve and autonomously increase yield and consistency over time.

Other benefits

Chef's new physical AI system will be:

- Built using proprietary hardware for the food industry
- Food safe, wash-down, and able to endure various temperature and humidity conditions
- Collaborative, working safely alongside workers
- Easy to use, as Chef's FFM is language-prompted

"We started Chef by focusing on high-throughput food manufacturing, but a large part of the industry still relies on manual prep table assembly," said Rajat Bhageria, Founder and CEO of Chef Robotics. "These environments are more complex and less structured, which makes them harder to automate. With this new physical AI system and our Food Foundation Model, we will extend physical AI to handle those real-world conditions and unlock a much broader set of applications in the food industry."

Read online: <https://worldbusinesswatch.com/news/11/81/chef-robotics-develops-bi-manual-physical-ai-system-to-automate-complex-food-prep-table-assembly.html>

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