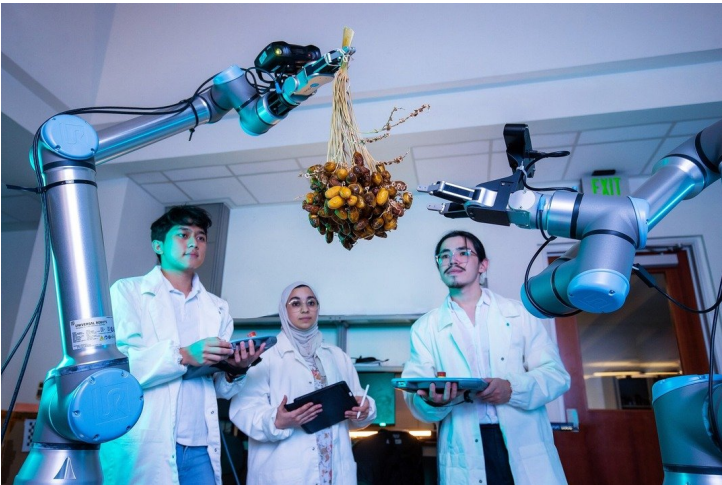


Saudi Arabia's KAUST developing robotic system to improve date palm harvesting

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Saudi Arabia's King Abdullah University of Science and Technology (KAUST) has developed an automated robotic system designed to automate date palm harvesting. The artificial intelligence-powered robotics to automate key date farming processes, such as harvesting, pollination and tree maintenance, which will yield more nutritious dates in larger yields.Â Â

KAUST Assistant Professor Shinkyu Park is leading research that uses Robots-as-a-Service (RaaS) model that can allow smaller farmers to benefit from the technology without the burden of purchasing the robots outright.Â Field trials are scheduled to begin during the 2025 harvest season, with full operational capability expected within three years.

Park's solution, "robotic farmers", combines robotics for reliable farming and AI for greater efficiency. The robotic arms of the system will be able to move as quickly as a human farmer while precisely picking each date without damage to itself or the fruit. By equipping them with high-precision visual sensors, the robotic farmers can distinguish individual dates, flowers, and tree structures to execute various farming tasks like harvesting, spraying, and pruning, which ensures the health, productivity, and longevity of the trees and reduces the risk of pest infestations and diseases. With the AI component of the system, robots will be able to learn much faster than humans, while the best farmers spend decades developing their expertise.

By the end of the project, Park hopes to have his robotic farmers handle dates of varying sizes and firmness while maximizing their harvest rate. A robot's ability to operate and collect data will be enhanced by AI, similar to how farmers learn by working in the fields.

Through the system, Saudi Arabia hopes to disrupt the agriculture industry and become a leader in innovation in agriculture. The project is just one of many at KAUST that will benefit date farming and food security. At the end of 2024, the National Center for Palms and Dates signed an agreement to fund SAR 100 million (\$25M) to KAUST for innovations in the date sector.

The Saudi diet has been dominated by dates for thousands of years. Date exports by the Kingdom have increased 10% between 2022 and 2023, and another 10% between 2023 and 2024. In date farming, ripeness has been determined by understanding the color and texture of the date and by the farmers' physical stamina, as they climb tall trees and cut off their harvest with knives and sharp objects. The ability to automate these processes - both the evaluation of the date fruit and the harvest - will allow date suppliers to supply higher quality dates more reliably and reduce worker risk.