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Kevin Wang and Dana Choi are among the University of Florida's newest artificial intelligence faculty.

Investing in artificial intelligence

University of Florida Institute of Food and Agricultural Sciences (UF/IFAS) breeders produce new citrus plants more quickly than they can figure out if consumers like how the new fruit varieties taste. In the race to create versus evaluate, creators lead evaluators by hundreds of individual plants at a time.

It takes a post-doc a year to go through about 30 different varieties. That's a pretty slow search for a needle in a haystack. UF/IFAS Citrus Research and Education Center (CREC) flavor scientist Yu Wang thinks artificial intelligence (AI) can help go through the backlog at high speed.

MAKING TASTE VISIBLE

Her idea is to try to "see" flavor. Using AI, she wants to compare images of fruit to her database of consumer flavor preferences and predict which varieties are likely to be the most popular for the palate.

To do it, she needs a camera, big AI computing power and an AI expert. Because UF/IFAS is investing in its goal to become the national leader in AI in ag, we've been able to equip her with all three.

The UF \$100 million investment in AI includes the nation's fastest AI supercomputer in higher education, HiPerGator. As part of

a university-wide push to hire faculty with expertise in AI, UF/IFAS has added 15 new faculty members, including one on Yu's team who brings the AI know-how and the hyperspectral camera. The UF/IFAS research office recently funded Yu and her team to explore her quest to make taste visible.

This is just one example of how AI can help the citrus industry. We've got thousands of sweet oranges, mandarins and grapefruits that could be the next supermarket sensation. The more AI can tell us about taste, the better chance we have of offering the right varieties for your groves.

NEW CENTER FOR COLLABORATION

We're about to ratchet up our AI work. In late October, we announced our plan to establish the Center for Applied AI in Agriculture. The 19,000-square-foot building at the Gulf Coast Research and Education Center (GCREC) will bring together agritech expertise in a single hub of innovation with a workshop for developing prototype machines. It will also have space to share among researchers and with you the ideas, discoveries and applications of this game-changing technology.

It will be a place to bring together the kinds of teams necessary to deliver the full benefits of AI to the farm. For example, Yu is a flavor chemist, so she had no way to assess her idea to see flavor in a mandarin until we hired an engineer who's an expert in artificial intelligence.

That engineer, Kevin Wang (no relation), is one of those 15 new hires, and he brings the AI expertise and high-tech camera to Yu's work. Kevin and Yu will work with citrus breeder Fred Gmitter — weaving together engineering, chemistry and genetics toward a solution to a problem no one discipline could adequately address alone.



UF IFAS
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GULF COAST RESEARCH & EDUCATION CENTER - BALM AI
INTERIOR RENDERING - MACHINE ROOM

FRANKSTUDIO

The Center for Applied Artificial Intelligence in Agriculture will bring together scientists with a broad range of specialties.

OTHER CITRUS APPLICATIONS

While we see huge upside in using AI to improve breeding, it has immense potential to help citrus in all sorts of ways. UF/IFAS engineer Sandra Guzmán is applying AI to

citrus irrigation at our Indian River Research and Education Center. Yianis Ampatzidis created Agrovie, which use drones and AI to count trees and assess plant stress. He partnered with an entrepreneur to form Agriculture Intelligence to make

Agrovie commercially available.

Arnold Schumann of CREC and Nathan Boyd of GCREC (one of the lead visionaries for the AI center there) are developing a smart sprayer that targets weeds when applying herbicides to strawberry and vegetable rows. This technology could also be adapted to groves.

AI will be no different than the way we've developed previous technologies. We want your input as we do it. Tell us what problems you need solved. Tell me. Tell Michael Rogers.

Let us try out AI applications in your grove to see if they work under real-world conditions. This has the potential to help every grower, not just those who can afford a substantial upfront investment. Your real wisdom and UF's artificial intelligence will revolutionize all of Florida agriculture, including citrus. 🍊

J. Scott Angle is the University of Florida's senior vice president for agriculture and natural resources and leader of UF/IFAS.

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