

People & Places

Making high-tech tools more useful

Duke Bulanon studies use of drones, robots in agriculture

By SEAN ELLIS
Capital Press

NAMPA, Idaho — Northwest Nazarene University researcher Duke Bulanon is working on several projects designed to help farmers use technology to better manage their crops and reduce costs.

The projects involve analyzing images taken by unmanned aerial vehicles — popularly called drones — or robotic platforms to help farmers make sense of what they're seeing and make timely decisions.

"A lot of people are telling farmers, 'We can use UAVs to help you,' but they are just dumping all this information on the farmers," said Bulanon. "But what will the farmer do with that information? You need a certain software that can interpret the information in those images."

Bulanon, an NNU professor in Nampa in southwestern Idaho, recently wrapped up a UAV project funded through the Idaho State Department of Agriculture's specialty crop grant program that involved using a small unmanned helicopter to measure the energy characteristics of a plant's surface.

The images can be used to monitor a plant's condition and help farmers address major challenges such as water stress, nitrogen deficiency and disease infestation.

University of Idaho researcher Essie Fallahi, who manages UI's pomology program in Parma, worked with Bulanon on that project and recently wrote a research pa-



Sean Ellis/Capital Press

Northwest Nazarene University researcher Duke Bulanon works on an autonomous utility robot that could help Idaho farmers manage their crops while reducing input costs. Bulanon is involved in several projects involving robotics and unmanned aerial vehicles that could benefit Idaho agriculture.

per about it that was published in a trade journal.

Though using images to detect anomalies in crops is still an emerging field that needs some fine-tuning, Bulanon is helping pioneer what could turn out to be an important tool for farmers, Fallahi said.

"Using those images as a guide, growers can come up

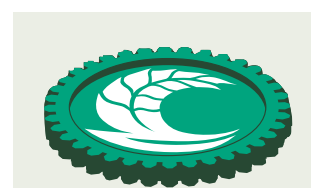
with important conclusions. It could be extremely important information for growers to have," he said. "Just about anybody can use a helicopter to take a few pictures. The important thing is knowing what those pictures mean."

Bulanon, 43, has received another two-year grant from the ISDA to develop a UAV-based system that uses

high-spectral imagery to accurately count the blossoms on peach, apple and other fruit trees.

That would give growers the ability to make early yield estimates and plan the post-harvest process, which includes ordering a certain number of boxes or crates, he said.

Bulanon hopes to expand



Western Innovator

Duke Bulanon

Occupation: Professor, Northwest Nazarene University, Nampa, Idaho

Education: Bachelor's degree in mechanical engineering, University of San Carlos, the Philippines; Ph.D. in agricultural engineering, Iwate University, Japan

Research focus: The use of technology to help farmers manage their crops while minimizing costs

Family: Wife, Ella, two sons

that project to include field crops such as onions.

He is also helping a fellow NNU professor develop an autonomous utility robot that could help farmers maintain and harvest their crops and minimize costs.

"It is basically like developing a Google self-driving car for the farm," he said.

That project will be expanded to add a camera to the robot to count the number of fruit on trees.

Born and raised in the Philippines, Bulanon gained a background in agriculture while working in the agricultural engineering program at Iwate University in Japan. His thesis for his Ph.D. was on the robotic harvesting of apples.

Later, at the University of Florida, he did research on the robotic harvesting of oranges.

Twins head for high school rodeo nationals

By MATTHEW WEAVER
Capital Press

Kayden and Kylie Beaver say it's more fun to compete with your sister than it is to go up against her.

The twin sisters from Prosser, Wash., are both 17, and are juniors at Washington Virtual Academies, an online high school.

Kayden and Kylie will be among more than 1,500 high school students competing in National High School Rodeo Association finals July 17-23 in Gillette, Wyo.

They will compete in team roping, Kayden as a header, roping the horns of a steer, and Kylie as a heeler, roping the heels of the steer.

"It's fun to compete with my sister, instead of against her," Kayden said. "We always have fun while practicing. At rodeos it's all about having fun with each other instead of competing."

"It's always awkward



Courtesy of Christy Delamarter

Prosser, Wash., high school juniors Kylie and Kayden Beaver will compete in team roping at the High School Rodeo Association nationals in Wyoming in July.

when we're competing against each other if one of us does really good and the other one doesn't," Kylie said.

A sister is more likely to forgive you if you make a mistake than another partner, Kayden added.

Or maybe not. "You can yell at your sister if they do something wrong,

you can't yell at someone else because you don't know them," she said.

They are the only girls from Washington to compete in team roping at nationals, Kayden said. The event is typically the only one in which both boys and girls can compete.

"It feels pretty awesome,"

Kayden said of reaching nationals.

"I'm just excited to go," Kylie said.

This is the sisters' first time at nationals. Kayden also competes in barrel racing and pole bending, while Kylie competes in goat-tying and breakaway roping.

The sisters have been competing "almost our whole lives," Kayden said. Their father competed in high school rodeo with his brother.

The sisters practice two to four hours almost daily, Kylie said. Both sisters say they enjoy team roping the most.

The rodeo's executive director, James Higginbotham, said he expects 1,500 contestants from 43 states, five Canadian provinces and Australia at the finals.

The association began in 1949 and has 12,000 to 14,000 members each year in high school and junior high school divisions.

"Where other kids may be

on the streets and having fun with their friends, these guys have to go home and take care of their animals," Higginbotham said. "It teaches them responsibility and how to get along with others."

Even when they're competing, high school rodeo participants are rooting for their competitors, Higginbotham said.

"A lot of people skills comes along with being a cowboy," he said.

Many competitors have a farming background, he said.

Higginbotham said rodeo schools are offered throughout the country for students interested in getting involved in the sport.

"It's always good advice to go to a school to learn how, not just do it through hard knocks," he said.

The association offers roughly \$1.5 million in scholarships to go on to college, junior college or a trade school, Higginbotham said.

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To submit an event go to the Community Events calendar on the home page of our website at www.capitalpress.com and click on "Submit an Event." Calendar items can also be mailed to Capital Press, 1400 Broadway St. NE, Salem, OR 97301.

Saturday, June 25

Washington State Dairy Ambassador Coronation, 5 p.m. Greater Tacoma Convention and Trade Center, 1500 Broadway, Tacoma, Wash. 360-273-7313. Tickets will not be available at the door.

Alpacas at the Gathering, 9 a.m.-4 p.m. Alpacas join the sheep and goats at the Black Sheep Gathering, with fleece, yarn, socks, scarves and more. Fleece show as part of BSG Wool Show & Sale. Lane County Events Center, 796 W 13th Ave., Eugene, Ore. Cost: free. www.alpacafarmsoregon.org

Sunday, June 26

Alpacas at the Gathering, 9 a.m.-4 p.m. Alpacas join the sheep and goats at the Black

Sheep Gathering, with fleece, yarn, socks, scarves and more. Fleece show as part of BSG Wool Show & Sale. Lane County Events Center, 796 W 13th Ave., Eugene, Ore. Cost: free. www.alpacafarmsoregon.org

Wednesday, June 29

OSU Caneberry Field Day, 1-5 p.m., North Willamette Research & Extension Center, 15210 NE Miley Road, Aurora, Ore. <http://oregonstate.edu/dept/NWREC/>

Thursday, June 30

St. Paul Rodeo, St. Paul, Ore. 1-800-237-5920. www.stpaulrodeo.com/

Friday, July 1

St. Paul Rodeo, St. Paul, Ore. 1-800-237-5920. www.stpaulrodeo.com/

Molalla Buckeroo Rodeo, Molalla, Ore. 503-829-8388. <http://molallabuckeroo.com>

Eugene Pro Rodeo, 4 p.m. to midnight, 90751 Prairie Road, Eugene, Ore. <http://www.eugeneprorodeo.com/>

Saturday, July 2

St. Paul Rodeo, St. Paul, Ore. 1-800-237-5920. www.stpaulrodeo.com/

Molalla Buckeroo Rodeo, Molalla, Ore. 503-829-8388. <http://molallabuckeroo.com>

Eugene Pro Rodeo, 4 p.m. to midnight, 90751 Prairie Road, Eugene, Ore. <http://www.eugeneprorodeo.com/>

Sunday, July 3

St. Paul Rodeo, St. Paul, Ore. 1-800-237-5920. www.stpaulrodeo.com/

Molalla Buckeroo Rodeo, Molalla, Ore. 503-829-8388. <http://molallabuckeroo.com>

Eugene Pro Rodeo, 5:30 to 11 p.m., Prairie Road, Eugene, Ore. <http://www.eugeneprorodeo.com/>

Monday, July 4

St. Paul Rodeo, St. Paul, Ore. 1-800-237-5920. www.stpaulrodeo.com/

Molalla Buckeroo Rodeo, Molalla, Ore. 503-829-8388. <http://molallabuckeroo.com>

molallabuckeroo.com

Eugene Pro Rodeo, 4 p.m. to midnight, 90751 Prairie Road, Eugene, Ore. <http://www.eugeneprorodeo.com/>

Wednesday, July 6

OSU Blueberry Field Day, 1-5 p.m. North Willamette Research & Extension Center, 15210 NE Miley Road, Aurora, Ore. <http://oregonstate.edu/dept/NWREC/>

Thursday, July 7

Marion County Fair, 10 a.m.-10 p.m., Oregon State Fairgrounds, Salem. 503-585-9998. <http://www.co.marion.or.us/CS/Fair>

Friday, July 8

California State Fair, 1600 Exposition Blvd., Sacramento, 916-263-FAIR. <http://www.castatefair.org/>

Marion County Fair, 10 a.m.-11 p.m., Oregon State Fairgrounds, Salem. 503-585-9998. <http://www.co.marion.or.us/CS/Fair>

Saturday, July 9

California State Fair, 1600 Ex-

position Blvd., Sacramento, 916-263-FAIR. <http://www.castatefair.org/>

Marion County Fair, 10 a.m.-11 p.m., Oregon State Fairgrounds, Salem. 503-585-9998. <http://www.co.marion.or.us/CS/Fair>

Sunday, July 10

California State Fair, 1600 Exposition Blvd., Sacramento, 916-263-FAIR. <http://www.castatefair.org/>

Marion County Fair, 10 a.m.-6 p.m., Oregon State Fairgrounds, Salem. 503-585-9998. <http://www.co.marion.or.us/CS/Fair>

Monday, July 11

California State Fair, 1600 Exposition Blvd., Sacramento, 916-263-FAIR. <http://www.castatefair.org/>

Tuesday, July 12

California State Fair, 1600 Exposition Blvd., Sacramento, 916-263-FAIR. <http://www.castatefair.org/>

Wednesday, July 13

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