

Drones

Continued from A5

Some have thermal imaging capabilities to scan for body heat, while larger drones can deliver medical supplies and other goods to people in isolated areas.

But researchers are finding more novel uses for an extra set of eyes in the sky — and noses. The University of Washington imagines drones that use smell to locate disaster survivors. The Aerospace Corporation is working on drones that can visually identify dogs and share their location with rescue teams. The University of Zurich developed a drone to change shape midflight to fit into oddly-shaped crevices.

Locating people using aerial acoustics presents its share of challenges. An auditory system would need to decipher between human cries and sounds that often happen in nature, such as animal calls and wind. It might also need to recognize patterns associated with kicking, clapping or other ways people try to get the attention of rescue teams.

Engineers at FKIE took those situations into account when building out their concept drone. They first needed a database of “impulsive” human noises to train the drone against.

They recorded themselves screaming, tapping and creating other noises that might be a sign of people in trou-



This drone with infrared camera helps Idaho Department of Lands crews monitor fire behavior. Engineers at a German company have developed drone technology that can detect and locate human screams and voices in distress that could aid in locating survivors after a disaster.

Idaho Department of Lands, file

ble. Then, they analyzed each sound frequency to find common “signatures” and used those to train artificial intelligence software.

They also worked to filter out the noise created by drone rotors and other environmental sounds, Varela said.

Once the software part was complete, they assembled a system of tiny digital microphones to provide “precise” angles for where sound is

coming from. Digital microphones like the ones found in smartphones and hearing aids were used because they don’t require as much bulky hardware as analog or traditional microphones, the researchers said.

The team placed the cluster of microphones under a drone and used signal processing techniques that enabled it to track where human noises are coming from. The system also

enhanced the volume and clarity of the speech. So far, they have conducted successful “open field experiments,” finding that the drone can estimate a victim’s location within a few seconds of picking up sound, Varela says.

In a demonstration video, the drone is shown hovering above the ground before pivoting in the direction of a researcher making noises and calling for help on the ground.

”We have already succeeded in angularly detecting and locating impulsive sounds very precisely ... with the presence of drone noise,” Varela said. The engineers are in the process of patenting their method for tracking down sounds using microphones.

Next, they would like to add a higher frequency microphone to a drone to enhance the system’s accuracy. The idea is to pick up noises from hundreds of meters away, Varela said. In the real world, victim location data might one day be sent wirelessly to emergency crews carrying a tablet.

Since announcing their development last week, the researchers have been approached by various organizations interested in partnering with them, Varela said. But it’s unclear when such a concept might be deployed.

The research institute primarily experiments and creates prototypes. It sometimes licenses discoveries to companies that focus on commercialized products, but the process is far from linear, according to Kai Nuernberger, who leads the institution’s business development department.

”We are good at developing technology and tackling problems that there is not yet a solution to. But commercialization is not really our task,” Nuernberger said.

Stocks

Continued from A5

A measure of nervousness in the stock market, known as the VIX, rose Friday but is only back to where it was about a month ago.

Banks are taking a hit from the shrinking gap between shorter- and longer-term interest rates, which helped send financial stocks in the S&P 500 down 2.4% on Friday. That was one of the sharpest losses among the 11 sectors that make up the index.

When the gap is wide, the industry can make big profits from borrowing cash in short-term markets and lending it out at longer-term rates. But short-term yields jumped sharply this week after the Fed’s indication that it may be moving up the timeline for rate increases. The Fed has said it expects high inflation to be only “transitory,” and prices for lumber at least have already started to moderate a bit. Much of Wall Street also says inflation looks to be only temporary, but part of the Fed’s mission is to keep prices under control.

Hemp

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The “foliage” included hand-picked hemp flowers with a higher oil content, while the “biomass straw” consisted of raw hemp that was combined in a field but not processed, Alley said.

Though the farm hoped to salvage the hemp, it was ultimately unable to sell any because the crop was too damaged by rain. At the time, the processed “foliage” would have been worth \$250 per pound

and the “biomass straw” would have been worth up to \$8 per pound, the complaint said.

While the insurance company paid out \$200,000 for the lost hemp as general personal property, it refused to pay \$600,000 under a policy specific to hay stored in a barn building, the complaint said.

The insurance company claimed the farm’s policy had a “CBD/THC exclusion,” referring to chemical compounds contained in hemp, but the farm claims that exclusion doesn’t exist, according to the lawsuit.

The insurance company also denied that hemp qualifies as “hay,” arguing it’s limited to dried grass, clover and alfalfa, while the plaintiffs argue the crop is “regularly used as forage and feed,” the complaint said.

The complaint claims the farm is owed the \$600,000 plus interest and attorney fees.

A representative of Allianz SE, a German-based conglomerate of which The American Insurance Co. is a subsidiary, said the company does not comment on pending lawsuits.

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