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# Iowa State Patrol to use drones for accident investigations

Grace Zaplatynsky  
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State Trooper Mark Anderson pilots the sUAS over the mock crash site, taking pictures to create a 3-D model of the scene.

CONTRIBUTED PHOTO

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**N**ew technology is now helping documenting and recreating crash scenes more efficiently, quickly and accurately for the Iowa State Patrol.

The Iowa State Patrol has started incorporating a new small unmanned aircraft system in its technical crash investigation program to document and investigate traffic crashes more efficiently.

The new drone uses 3-D imaging and mapping to collect precise digital evidence, allowing the patrol to investigate and reconstruct crash scenes and minimizing highway disruptions through the quick and accurate documentation.

“This is a fantastic day for the State Patrol as we look at the technology and where we’re going with the sUAS program that the Iowa State Patrol is initiating,” Sgt. Alex Dinkla said.

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The systems will be used as part of the traffic investigations division only to use for accident investigations, not for traffic enforcement, Dinkla said.

“There’s been some theory: does it get used for any traffic enforcement? And that is a hard no,” he said. “It will not be utilized for any type of traffic enforcement. Actually, there is a law that prohibits us to be able to even utilize that as a traffic enforcement program.”

There are eight collision reconstructionists in the State, two for each of the four areas in Iowa, who are certified with an FAA Part 107 Certification to pilot the drones.

Mason City is the headquarters for District 8, which is a part of Area C; its reconstructionists come from Fort Dodge, the District 7 headquarters.

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Each reconstructionist will have his or her own sUAS, a DJI Mavic 2 Pro.

The system does not take any video; it only takes still pictures at several different angles, which are then reconstructed, or “stitched together,” into a big 3-D model of the crash scene to scale using imaging software, Dinkla said.

Trooper Mark Anderson, one of the reconstructionists for Area C based in Fort Dodge, said he can fly the drone over the scene, take his photographs from the air, and once he’s done the vehicles can be removed and the road can be cleared and open to the public again.

“Which is what our main goal is: to get everything back to normal as quick as possible,” Anderson said.

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The drone has a high-resolution camera to take hundreds of images from all the different angles in a grid pattern over the crash scene and collect data points for measurement purposes.

Once the photos have been put together and the 3-D model has been made on the computer, officers can view the scene from any angle, moving into the scene anywhere they want to go, Anderson said.

“If you take photographs in the air of skid marks, sometimes just pictures don’t show it, but with this 3-D model, we’ve seen it where, when you tilt the scene, you can actually see shadows, like in the grass, that you couldn’t actually see in the photographs to begin with,” he said. “So you can just turn it in any direction to see any angle of the scene itself.”

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From when he started a long time ago, Anderson said he never thought he'd have any of this. They just had measuring tapes when he started to investigate scenes.

“Now we're flying UAVs to take mapping from the air, so technology's awesome,” he said. “And the end product is just spot-on. The measurements we can do on the computer are just phenomenal.”

Anderson said they can use the 3-D model to show county attorneys and juries in a criminal setting what it looks like from drivers' perspective to help in court.

Using some assets from the Iowa Department of Transportation and MidAmerican Energy was a big help in launching the system, according to Dinkla.

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Last year, there were 149 fatal crashes the Iowa State Patrol investigated and reconstructed, and current investigative techniques use a manual total station, which can take hours to fully document a collision scene.

“That's a lot of fatal crashes that we are putting our hands on, and we need to do a good service to each one of those families and people that were impacted by those crashes,” Dinkla said. “And so this new technology, it's going to be a huge benefit to not only Iowans but motorists as they travel through our state.”

One of the biggest advantages to using the system is minimizing the time traffic is altered by the crash scenes, which is a big deal because the likelihood of a secondary crash increases by 3 percent every minute a road is closed, Dinkla said.

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“If we’re out there in the interstate, we have maybe the Interstate shut down for several hours, we know that there are a lot of people affected by that,” he said. “And so with this new technology, once we become fully proficient with that, our hope is to maybe be able to map a crash scene in 20 to 30 minutes.”

The State Patrol does not intend to get rid of the total stations, though; instead, they will be using them as backups for when weather (such as strong wind, snow and rain) or nearby objects, like buildings and trees, prevent the drones from flying.

“By no means is [the total station] going away,” Dinkla said. “[The sUAS] is not going to fully replace what we have.”

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For the next six to 12 months, every crash scene will be “dual majoring” by documenting with both the total station and the new drone to prove it is also an accurate tool, according to Dinkla.

“Our hope is that we can make sure that we utilize both measurements, and we can basically put them on top of one other, they’re going to mirror each other, so that when we go to court and everything like that, we can bring good relevance to that program to be proven accurate,” Dinkla said.

The Iowa State Patrol has been looking at building this new program for the past two years, studying similar programs run in Missouri and Wisconsin.

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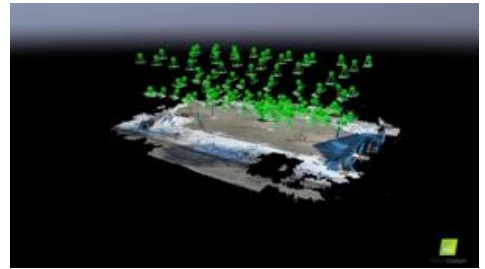
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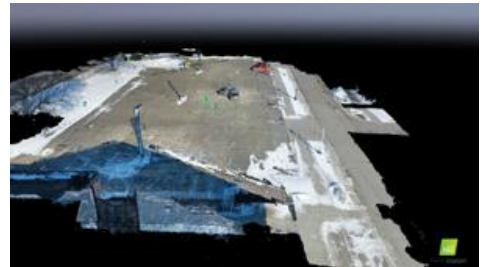
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