

News & Views

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STUDENT TEAM EXPLORES DRONE USES

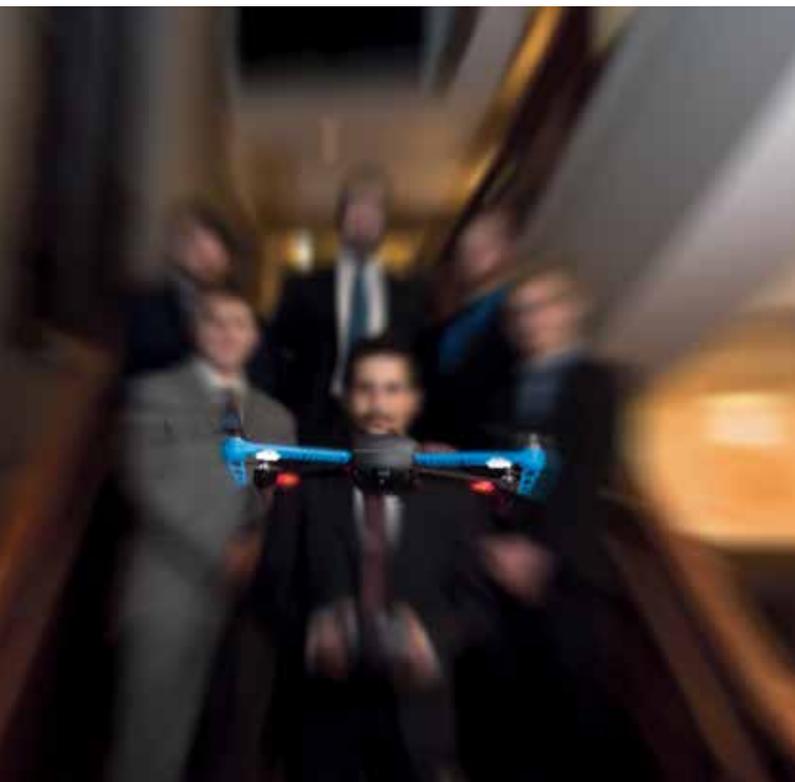
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CROSS-CAMPUS TEAM EXPLORES RISKS AND BENEFITS OF DRONES

By Steven Barcus

Illinois State students from across campus are exploring the potentially groundbreaking applications of drones for commercial uses. Project leader Daniel Liedke, a risk management and insurance major, has assembled a team from multiple disciplines, including computer science, political science, risk management and insurance, and agriculture to analyze the benefits and risks of implementing this technology.

The students' interest in drones, or unmanned aerial vehicles (UAVs), began with a research project overseen by Katie School of Insurance and Financial Services Director Jim Jones. Jones and a group of Katie School students, which included Liedke, were working with officials in Ghana on developing crop insurance audit methods that would estimate yields and losses using satellite images. The satellite produced grainy images that proved useless in gathering effective data.

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The students began searching for solutions by researching efficient farming and measurement methods used in the United States and comparing them to methods used abroad. They also began to explore the types of equipment that could be used to enhance the farming and measure crop yields. That’s when the focus turned to UAVs.

“The whole purpose of this project is to get students to start to understand how to gather information, how to analyze information, how to contemplate the business uses of different technologies, evaluate the risks of different things going on—things that will be game changers in the future,” Jones said.

The team found that UAVs with mounted infrared cameras could get a much more accurate look at crop yields. Other applications for precision agriculture also became apparent, including monitoring crop weather damage, pest and weed management, examining and avoiding spread of disease in crops and livestock, dedicated irrigation, and determining specific concentrations of pesticides and fertilizers. It seemed that through these applications, UAVs could reduce costs, increase yields, and prevent runoff—all while maximizing profit.

“From all of our unique perspectives we started asking what are the uses for UAVs, and because we focused on agriculture, what are the issues we’re running into and what are some that people aren’t talking about,” Liedke said.

Despite all the uses for the technology, using UAVs for commercial purposes is relatively uncharted territory. The barriers to using UAVs are not technological, as much as they are based on restrictions by the FAA, as well as the insurance industry, as they learn how to implement the technology.

The legal challenges presented by implementing UAVs into commercial use prompted Liedke to add Devin Taseff, a political science major, as a legal researcher. Taseff, who hopes to study law at Northwestern University after graduating from Illinois State, said the FAA restrictions on the commercial use of UAVs are not due to a rejection of the technology so much as a lack of infrastructure to regulate them.

“An entire new framework has to be put in place, much like the law for the highways,” Taseff said. “We have to have a system put in place that is safe and efficient. The technology, much like the Internet and computers and microchips, is so far outpacing the legislation that it is people in the industry who will be working with the FAA and laying groundwork.”

UAVs have become relatively popular in hobby and recreational flying and do not require FAA approval as long as they do not fly above 400 feet and remain in sight of the operator.

Taseff also noted that many countries outside of the United States have already implemented UAVs for commercial use. For example, Japanese farmers use UAVs to more precisely water and fertilize crops— which in turn have helped cut the farmers’ costs by three percent. The technology, if implemented in the U.S., could save billions nationally.

In a presentation given to the Katie School of Insurance and Financial Services Advisory Board, the research team suggested that approximately \$89 billion within the next decade will be spent on the UAV industry. Given that UAVs are at risk for hacking, piracy, damage during transport or storage, and crashes due from cargo and the UAV itself, establishing practices for insuring and underwriting is crucial to protecting the value of the technology.

“One of the big risks associated with UAVs is that they can be hacked into,” Jones said. “With some inexpensive equipment you can get a UAV to follow your signal.”

Representatives from State Farm and COUNTRY Financial requested a presentation not only on insuring and underwriting

UAVs,
but also
how their individual
companies could use the
technology in their own operations or
create efficiencies.

The Katie School and College of Business have supported the student-driven project by purchasing two UAVs that the students can use for testing, and sent representatives from the team to the 2014 International Conference on Unmanned Aircraft Systems in Orlando, Florida. The school also connected with a Chicago-based law firm to examine the legal issues associated with UAVs. The group is exploring indoor facilities where they can fly the two UAVs to further their research and collect data.

The experience has been invaluable for the students involved as they prepare for their futures. Even after the team members graduate, they plan to help the students who will continue the research and create recommendations and infrastructure that could be key in shaping an emerging industry.

“This has given me an edge over any law student applying to Northwestern,” Taseff said. “It gives me an edge over any law student I would compete with to get a job at a law firm. I’m exploring an emerging market and doing the work of a lawyer as an undergrad. There aren’t even second-year law students who are doing what we are doing because it is on the cutting edge.”

“We got to research something we were passionate about,” Liedke said. “I got to learn about IT, law, and all of these different fields I never would have thought about. At the same time, I got to educate people on my field, and now we all have a better understanding of each other’s areas.”

