

outbursts

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Soaring into unmanned aircraft production

Virginia Tech study identifies the commonwealth as a ready contributor to unmanned systems technology

By Andrea Brunais

With its strong technology workforce, as well as manufacturing capacity, the commonwealth is well positioned to meet the needs of unmanned aircraft manufacturers. That's the conclusion of a Virginia Tech study that includes analysis from the Office of Economic Development.

Virginia is well poised to pitch the commonwealth to manufacturers of unmanned aircraft, also called drones, Jennifer Shand, senior economic development specialist, discovered. Virginia's technology workforce includes 300,000 people already at work in related fields. This means that if a manufacturer sought to add a product line, for instance, many Virginia companies would instantly be able to offer in-house expertise.

Winning workforce

Virginia's strength is in technology development such as computer programming, engineering and design. Another industry sector is strong as well: componentry manufacturing – the circuitry that goes into the unmanned systems. "Virginia has a ready-made workforce for technology development in unmanned vehicle systems," Shand says.



Virginia Tech's David Schmale designs unmanned aircraft to fly and collect samples of rain from the atmosphere. Virginia Tech is part of the newly formed Mid-Atlantic Aviation Partnership.

Background

The study was a collaborative effort among the Virginia Department of Aviation, Virginia Economic Development Partnership, Center for Innovative Technology, and Virginia Tech. In addition to the Office of Economic Development, contributors included the Institute for Critical Technology and Applied Science and the College of Engineering.

"Virginia has a ready-made workforce for technology development in unmanned vehicle systems."

- Jennifer Shand

In late December, the Federal Aviation Administration approved a Mid-Atlantic Aviation Partnership test site led by Virginia Tech to integrate unmanned aircraft into the national airspace. The FAA considered 25 proposals from 24 states, choosing six. The Virginia Tech test-site proposal drew public support in September from the governors of Virginia, New Jersey, and Maryland. The full report can be downloaded from the Virginia Department of Aviation homepage: <http://www.doav.virginia.gov/>.

Putting STEM knowledge to work

Virginia Tech U.S. Army partnership helps student invent the future

By Dana Cruikshank

When you first meet Saumil Bandyopadhyay, you may find yourself trying to figure out his age. Bandyopadhyay comes across as your typical high school student, an intelligent and well-spoken one. But as you hear him explain his passion for science and his work, it's hard to believe he hasn't yet seen his 20th birthday.

A few years ago, Bandyopadhyay was a curious teenager at the Maggie L. Walker Governor's School in Richmond, Va. Soon that curiosity led him to thinking about infrared light and other aspects of optics technology. After studying all he could on the topic, Bandyopadhyay began cold-calling university researchers near his home, seeking lab space to work on experiments of his own. After hearing "no" several times, he finally got an invitation from Gary Tepper, a professor of engineering at Virginia Commonwealth University, to be an intern in Tepper's lab.

Bandyopadhyay got to work creating infrared and other types of sensors that are much smaller than existing sensors. Also, they didn't require the super-cold temperatures that these types of sensors typically required at the time.

Enter Virginia Tech. Bandyopadhyay's work led him to compete in the Army Educational Outreach Program's Junior Science and Humanities Symposium. The AEOP, which is operated within the Office of Engagement at Virginia Tech, helps enrich talented students with interests in science, technology, engineering and mathematics, a subject group often called STEM. (The U.S. Army promotes STEM education to strengthen the U.S. national defense industrial base.) At the symposium, Bandyopadhyay connected with other bright young minds from across the country.



Saumil Bandyopadhyay

Bandyopadhyay's sensor may make it easier to find lost persons in remote or dangerous areas using satellites, among other practical applications. Shortly after competing in the symposium, Bandyopadhyay was invited to work in a U.S. Army lab, working with researchers more than twice his age to help put his new sensor into practice. He credits the symposium experience as invaluable in his development as a scientist.

Bandyopadhyay is now an undergraduate at MIT and was recently given an American Ingenuity Award from the Smithsonian. Thanks to his own curiosity and talent – with a little assist from Virginia Tech's partnership with the U.S. Army – he is now poised to put his STEM knowledge to practical, helpful use.

U.S. Army Educational Outreach Program at Virginia Tech

Virginia Tech is the lead organization in the consortium that operates the Army Educational Outreach Program (AEOP) in close cooperation with the U.S. Army. The AEOP is composed of U.S. Army-sponsored research, education, competitions, internships, and practical experiences designed to engage and guide students and teachers in science, technology, engineering, and mathematics (STEM) education. There are more than a dozen AEOP sites operating across the country at Army labs, universities, and online. From elementary school through graduate school, the AEOP offers thousands of students of all proficiency levels, interests, and academic backgrounds the opportunity to participate in real-world activities in these vital disciplines.



Virginia Tech provides administrative and programmatic support, as well as guidance and expertise in marketing and evaluation.

Hear, see, and learn more...

- **Related video - Virginia Tech Study of unmanned vehicle systems:**
<http://tinyurl.com/VTStudyUA>
- **Saumil Bandyopadhyay shares his AEOP experiences:**
<http://tinyurl.com/SaumilB>
- **Bandyopadhyay featured in Smithsonian magazine:**
<http://tinyurl.com/SB-Smithsonian>
- **Bandyopadhyay featured on the Smithsonian channel:**
<http://tinyurl.com/SB-Smithsonian2>
- **Related video - AEOP:**
<http://tinyurl.com/AEOPvideo>
- **Army Educational Outreach Program at Virginia Tech:**
<http://www.cpe.vt.edu/aeop>

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