Student Teams Fly High at 6th Annual MAV Student Challenge

On Monday, May 14, 2018, six teams met to test their skills at the 6th Annual Micro Air Vehicle (MAV) Student Challenge at Forum 74 in Phoenix, Arizona. Two teams from each of three schools — Penn State University, the University of Maryland, and Vaughn College of Aeronautics & Technology — were selected to compete in this year's challenge.

By the VFS Unmanned VTOL Technical Committee

The Unmanned VTOL Committee has hosted the challenge at the AHS Forum every year since the first MAV competition in 2013. The event invites students from all over the world to compete with their peers to accomplish challenging tasks using autonomous and unmanned VTOL technology. Each year, students choose to design, build and fly either a remote-controlled air vehicle or a fully autonomous aircraft to complete the prescribed mission.

This year's challenge centered around a package delivery set in the Wild West. The electric-powered MAV's task was to deliver one envelope to a local bandit, fly to a second location to pick up another envelope filled with the bandit's stolen gold, and return the gold to police headquarters. The air vehicles also had to navigate the route while avoiding Weaver's Needle — a tall obstacle representative of the 1,000 ft (300 m) high rocky peak in the Superstition Mountains, east of Phoenix.

The task this year was particularly challenging: hovering low to the ground to deliver the envelopes on target introduces controllability issues for the vehicle and presents problems with downwash when dropping off and picking up the lightweight envelopes. Nicholas Rehm from the University of Maryland's "RC Flying Terps" stressed the importance of designing the vehicle to combat these effects: "We noticed last year that vehicles of our size tended to blow away the small target package during pickup. … To combat this, we aimed to design a quadrotor around the idea of downwash mitigation by extending our grabbing mechanism out in front of the vehicle rather than underneath it."

The event was led by Kristin Little, outgoing president of the Arizona Chapter, and her team — who developed the course and provided support to the competing teams. Despite a variety of technical difficulties that prevented the three autonomous teams from completing the course, the judges recognized the technical merit of each autonomous MAV by awarding honorable mentions to Penn State University's "Nittany Juggdaus," Vaughn College's "Aerial Robotics Team," and the University of Maryland's "TerpCopter".

Of the three teams competing in the manually-piloted competition, two teams completed successful flights. The University of Maryland's "RC Flying Terps" were awarded $1,500 for most innovative design, while Vaughn College's "UAV Club" took home the grand prize of $2,000 for Best Remote Target Search. Unfortunately, Penn State's "Goose Goose Duck" experienced technical difficulties that prohibited a successful run of the course. However, each team demonstrated great technical ability and

The MAV Challenge students, faculty, judges and organizers. (VFS photos)

Vaughn College's UAV Club won the $2,000 prize for the "Best Remote Target Search."

innovation in the design and flight of its MAVs, and the Unmanned VTOL Committee offers its congratulations to all the students who worked long and hard on this competition!

The MAV competition is designed to provide students an opportunity to demonstrate their knowledge, creativity and leadership skills while working together as a team. Stay tuned for details about future challenges!

Learn more at ❯ www.vtol.org/mav. View photos from the event at ❯ https://gallery.vtol.org/album/GfeX.