Engineer of the Month for September

By: Desiré Bennett

UC Aerospace engineering student Brandon Cook plays as hard as he works.

Brandon Cook is the UC College of Engineering and Applied Science Engineer of the Month for September. Brandon maintains a 3.981 GPA in his third year in the aerospace engineering program while working toward dual degrees of Bachelor of Science and Master of Science in the college’s ACCEND program.

The prospect of participating in the ACCEND program is what initially drew Brandon to UC. “It’s a really great program—I love it—it’s probably the main reason I came to UC,” Brandon said. And after being in the program for three years, he’s still happy about his decision. “It’s been a great challenge but overall it’s a really good push to keep pursuing my degree because when I get out I’m going to have two degrees, all of the core classes under my belt, plus the co-op experience.”

Brandon recently completed a six month double Rotation at GE Aviation in Evendale, Ohio, where he learned a lot of professional and technical skills. “I was working in component tests for turbines and I really got to see the data acquisition side of things. I also learned a lot about instrumentation and data analysis,” he said. “It really helped broaden my knowledge as an engineer.”

Associate Professor of Aerospace Engineering & Engineering Mechanics Kelly Cohen, PhD believes that Brandon is the perfect choice for September’s Engineer of the Month. “I am thrilled and I strongly feel that his exemplary performance in academics clearly distinguish him as an outstanding student.” Cohen mentored Brandon during his work in the highly esteemed Research Experience for Undergraduates (REU) program.

As part of the REU program, Brandon conducted research based on fuzzy logic decision making systems. The Fuzzy Collaborative Robotic Pong (FLIP ) project was initiated in the Summer of 2011 and is based on the classic Atari game Pong. It was adapted for MATLAB for both singles and doubles where a robot (or two robots) play against human opponents. “Brandon did some exceptional work in adding a rotational degree of freedom to the existing translational one thereby adding a fair amount of complexity to the ‘game’,” said Cohen.

Robotic decision making is based on Fuzzy Logic algorithms which emulates human decision making. “I created a robot that used human emulation of thinking and logic so that it could beat
its opponents based on spatial and temporal awareness – it’s like artificial intelligence almost, in that it’s a human logic emulator,” Brandon explained. “Usually computer programs are binary, like ones and zeros and this creates a spectrum from zero to one. So there are an infinite number of solutions for the task at hand.”

Brandon is currently in the application process to continue research in the Fuzzy Logic field. The project continuation is to make the game into a "doubles" game where teams of two play against each other. The fuzzy robotic controllers will use collaborative linguistic reasoning to defeat its opponent.

This game is one of many examples of how fuzzy logic can be implemented into real life robotic applications. “The idea is to develop robotic teams capable of real-time Spatio –Temporal situational awareness and decision making in a time critical constrained scenario with a very specific cost function,” Cohen explained. This type of technology could prove useful in disaster situations. “Collaborative robots can make an immense difference in disaster management where humans may have trouble operating in a hostile environment.”

Away from the classroom, Brandon masterfully juggles many activities. “I’m on the track team and I’m a member of Sigma Phi Epsilon,” he said. Through his fraternity, Brandon has served as a community service chair setting up events for places like the Ronald McDonald House and Cincinnati community outreach and loves the fellowship these experiences foster. “It’s nice hanging out and getting to know people.”

Brandon is also a member of the UC Skydiving team. “When I turned 18, that’s one of the first things I did – I went skydiving with a couple of friends. And then when I got to campus I knew UC had a club so I signed up.”

When he’s not running down the track or jumping out of airplanes, Brandon also participates in Circle K International, a global collegiate service organization that is a sponsored leadership program of Kiwanis International. “We do different community service events throughout the year and participate and help the community.”
Brandon says time management and staying balanced are the secrets to his success. “You have to be able to have time for yourself and have time for school and have time for your physical needs. You know the saying ‘sound mind, sound body’” he explained. “Just keep working hard.”

ENGINEER OF THE MONTH

As one of the most innovative colleges, the College of Engineering and Applied Science at the University of Cincinnati takes pride in its exceptional students and their successes. “Our vision is to produce outstanding engineers and technologists,” states Interim Dean Teik C. Lim, PhD. “WE ENGINEER BETTER™ starts with our training the next generation and we are proud to introduce a few of our leaders.”

Starting in August and each month this academic year, the college is recognizing one of our upper classmen (junior or senior) as our Engineer of the Month.

Each Engineer of the Month has demonstrated excellence in the classroom, success in their co-op assignments, and leadership through extracurricular activities on campus and/or in the community. These students have found the balance needed to be leaders and exemplary scholars.

The College of Engineering and Applied Science salutes their efforts and recognizes:

Brandon Cook

Engineer of the Month for September

Junior - 3.981 GPA

Aerospace Engineering - ACCEND™ Program