SPACE TECHNOLOGY RESEARCH FELLOW

Vanderbilt graduate student Electa Baker was one of 65 individuals selected by NASA for its 2013 class of Space Technology Research Fellows. Baker used this fellowship to create new visualization methods that allow robot operators to assess the large amounts of information that they need to supervise robotic operations. This information is displayed in specially designed interactive maps that can also be used to provide autonomous robots with the information that they need to do their jobs without human supervision. The Space Technology Research fellowship—valued at $68,000 and renewable for up to four years—is a part of NASA’s Space Technology Mission Directorate, which is dedicated to innovating, developing, testing, and flying hardware for use in NASA’s future missions.

NASA’S MINORITY UNIVERSITY RESEARCH AND EDUCATION PROJECT

In 2013, graduate student Teresa Monsue was awarded a Harriett G. Jenkins Graduate Fellowship through the Minority University Research and Education Project. This select fellowship was awarded to just 30 graduate students to increase diversity in science, technology, and math disciplines. The fellowship provides $45,000 annually for as many as three years and includes tuition offset, student stipend, and a research experience at a NASA center. Monsue is also a Fisk-Vanderbilt Master’s-to-Ph.D. Bridge student in astronomy. The Bridge program provides minority students with the strong academic foundation, research skills, and one-on-one mentoring relationships necessary to foster a successful transition to a Ph.D. program at Vanderbilt in astronomy, biology, chemistry, physics, or materials science.

CUBESAT

NASA selected a miniature satellite designed by a team led by Vanderbilt’s electrical engineering faculty to fly as an auxiliary payload aboard rockets planned to launch in 2014, 2015, and 2016. The Vanderbilt project—RadFxSat (radiation effects satellite project)—is a partnership between the university’s Institute for Space and Defense Electronics and the Radio Amateur Satellite Corporation in Silver Spring, Maryland. These miniature satellites, also known as CubeSats, provide an unprecedented opportunity to test the billions of calculations Vanderbilt researchers have conducted on the ground using computers. These projects also expose a new generation to the exciting discoveries where electrical engineering and computer science intersect with space exploration.

VANDERBILT AEROSPACE CLUB

For the second year in a row, the Vanderbilt Aerospace Club rocket’s performance propelled them to a first-place finish in NASA’s national rocket competition which includes much more than simply designing and building a reusable rocket. The contest stretched over nine months and required the design and flight testing of three payloads, preparation of detailed engineering reports, rocket flight tests, creation of a website, and community outreach efforts. Each team’s progress was evaluated throughout the year by NASA engineers, contractors, and aerospace industry advisers. The club is supported by NASA, the Tennessee Space Grant Consortium, and the Vanderbilt University Department of Mechanical Engineering.

TENNESSEE SPACE GRANT CONSORTIUM

Vanderbilt is the lead institution for the Tennessee Space Grant Consortium (TSGC), which has approximately fourteen affiliate institutions from around the state. The goal of the Space Grant Consortium is to inspire more students to pursue careers in NASA or STEM fields. TSGC provides scholarships and fellowships to undergraduate and graduate students at each of the affiliated institutions. At Vanderbilt, TSGC also supports Vanderbilt Student Volunteers for Science as they tutor students in the community, and the Vanderbilt Aerospace Club which competes each year in a rocket-launch competition sponsored by NASA. Students from schools all across Tennessee, affiliated or not, may receive financial assistance through TSGC to attend summer programs at NASA centers.
PLANET FINDING MISSION

A team of Vanderbilt astronomers will play a key role in the planet-seeking space telescope that NASA has approved and scheduled for launch in 2017. The $200 million spacecraft will perform the first space-borne all-sky survey for planets circling the brightest stars. Vanderbilt Professor of Physics and Astronomy Keivan Stassun is a co-principal investigator on the project, and he and his team will be selecting the specific stars that the project will target in its search for subtle, periodic dips in brightness that occur when a planet transits across a star’s face.

EXTREME UNIVERSE SPACE OBSERVATORY

NASA has awarded $4.4 million to a collaboration of scientists at U.S. universities including Vanderbilt and NASA’s Marshall Space Flight Center to help build a 2.5-meter ultraviolet telescope called the Extreme Universe Space Observatory for deployment on the International Space Station (ISS) in 2017. The telescope will study the energy spectrum and the nature and origins of cosmic rays. U.S. institutions will use the NASA grant to build lasers, flashers, and monitoring equipment that will be used to calibrate the telescope’s optics from twenty locations around the globe as the ISS passes overhead.

PLANETARIUM ROADSHOW

Through a partnership with Fisk University and NASA, Vanderbilt participated in the first Planetarium Roadshow. This event allowed faculty from Vanderbilt and Fisk to teach K–12 students in Tennessee about constellations, stars, and astronomy with the help of an inflatable planetarium. Vanderbilt was also proud to partner with NASA for a series of summer space camps at the university’s Dyer Observatory.

Aerospace Club members inspect their rocket, which landed less than 600 feet from the launch pad and won the NASA Student Launch Competition.