



NEWSLETTER

Student Spotlight on: *Rachel Parlock*

Rachel Parlock attends the University of Hartford and is currently a fifth year with a double major in Mechanical Engineering with an Acoustics Concentration and Mathematics.

Ms. Parlock was awarded a Summer Industrial Internship Grant for the summer of 2011 from CT Space Grant. She completed her internship at Pratt & Whitney, where she worked on a project to reduce tone noise from fan wake interaction with a structural piece in an engine. During her internship, Ms. Parlock learned a lot about aero-acoustics and got an eye-opening first experience working in the engineering industry. She was very impressed with the whole company of Pratt & Whitney and appreciated the chance to work there.

Ms. Parlock also received a CT Space Grant Directed Campus Scholarship, which helped drastically with paying tuition for her final year of school.

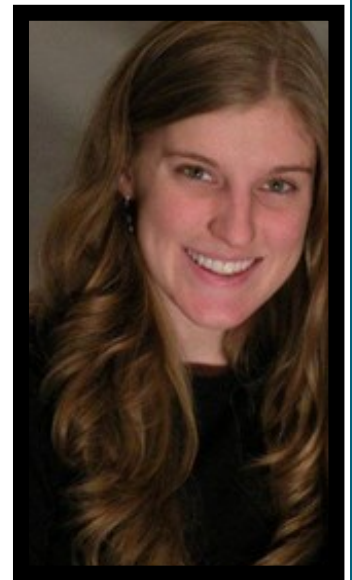
Last year, she was given the opportunity to travel with the director and program coordinator to the National Space Grant Directors Meeting in Washington, D.C. There they traveled to the offices of Connecticut Members of Congress to ask that they support NASA Education. She

attended as an example of an internship recipient, sharing her experience. "It was a wonderful opportunity to give back to the program that helped me so much!"

Ms. Parlock plans to pursue a career in acoustics after she graduates. Further down the road, when she has a family, she intends to put her math degree to use teaching math.

In her spare time, Rachel sings in a campus a cappella group, she is co-captain of the university's Women's Ultimate Frisbee team, and she enjoys hanging out with friends.

Rachel has entered her third year working as an office assistant in the CT Space Grant office. ♦



Connecticut Space Grant College Consortium

VISION STATEMENT

Make the United States the Aerospace leader of our solar system.

MISSION STATEMENT

Make Connecticut the national Leader in NASA-related education, research and workforce development.



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Student Spotlight on: *Katelyn Burkhart*



Katelyn Burkhart is a second year Biomedical Engineering graduate student at the University of Connecticut. Ms. Burkhart received a CT Space Grant Graduate Fellowship in 2011, and used this to evaluate a human motion tracking suit.

In order to optimize human performance in space exploration, astronauts need to be properly equipped with the right space suit. The human motion tracking suit is designed to be worn inside a pressurized space suit and uses linear optical encoders to track joint movement. Software converts the linear measured distance into angles, which is then compared to an external tracking program that looks at the movement of

the space suit itself. Inconsistencies found between the outer space suit and the movement of the astronaut inside indicate that a redesign needs to be considered in order to improve biomechanical efficiency and comfort.

Ms. Burkhart was able to learn more about the difficulty of tracking human motion in enclosed spaces and how it was necessary to keep trying new approaches to solve the same problem. She was also able to collaborate with Dr. Sudhakar Rajulu, Director of the Anthropometry and Biomechanics Facility at Johnson Space Center, in order to keep them up to date with the project and ask them any questions she had. Overall, she learned that this research requires knowledge of multiple disciplines (biomedical, electrical, and computer engineering), and that it is necessary to have a great amount of patience while trying to combine all of this to create a human motion tracking system.

Ms. Burkhart plans on finishing her Master's Degree in Biomedical Engineering at UConn next spring. After that, she hopes to continue on at another graduate school for her Ph.D. in Biomedical Engineering with a focus in Space Medicine. In her spare time, Katelyn enjoys reading fantasy novels, hiking local mountains, and running obstacle races. ♦

Student Spotlight on: *Sarah Lamotte*

Sarah Lamotte is a junior in Engineering Physics with an Electrical Engineering Concentration at the University of Connecticut. Ms. Lamotte attended a summer 2012 NASA Ames Research Center Program supported by CT Space Grant. She worked on a wireless instrumentation system for a tilt rotor test rig. She learned a lot about the practical applications of electrical engineering. Specifically, it showed her all the testing that goes into implementing the smallest components of any project.

Sarah says, "I'm really thankful for my Space Grant funding. I gained so much hands-on experience, and it lead to the best, most adventurous summer of my life."

In the future, Sarah plans to attend graduate school for physics and then possibly go into academia. In her spare time, Sarah enjoys rock climbing, reading, and drawing. ♦



Faculty Spotlight on: *Dr. Amalia Rusu*

Dr. Amalia Rusu received a Faculty Research Grant from the CT Space Grant Consortium in the spring of 2011, using the funding during the 2011-2012 school year. Dr. Rusu has been an Assistant Professor in the Department of Software Engineering at Fairfield University for the past five years, and she is currently in the process of becoming an Associate professor.

The title of Dr. Rusu's work is "A Rapid Simulation Environment for Rotorcrafts". The scope of the work focused on the rapid creation, testing, and deployment in a virtual environment of rotorcrafts and the algorithms that support tuning rotorcraft performance, executing functionality, and visualizing the concept. Basically, Dr. Rusu developed a faster, cheaper, and less complex way to design complex systems (rotorcrafts). CT Space Grant funding coupled with equipment and lab facility support from Fairfield University, complemented by Sikorsky Innovations collaborators expertise allowed Dr. Rusu to grow a research group focused on concept simulation of aircraft technology.

Two undergraduate students also received stipends through Dr. Rusu's grant to work on the project and to further their research experiences and knowledge in the area of systems design and rapid simulation. In collaboration with those students, she presented a poster related to their work to the Annual Sigma Xi Poster Session on April 26, 2012 at Fairfield University.

"Funding this project, however," says Dr. Rusu, "gave me the opportunity to continue to develop knowledge and expertise in this field and grow my pre-tenure academic research as well as the collaboration between the University, Sikorsky Innovations, aerospace industry, and other institutions." The plan for the project is growth in the future, and this should contribute to the foundation necessary to acquire additional funding. She is preparing a manuscript to be submitted to an international conference in the field of interest. Even before getting the CT Space Consortium grant, Dr. Rusu had a history of collaboration with the aerospace industry and involving undergraduate and graduate students in quality research as she collaborated with the Simulation and Analysis group at the Federal Aviation Administration in Atlantic City on sev-

eral projects for air traffic control that allow analysts to perform rapid visual comparative analyses of flight and projected trajectory data. Several such systems have been delivered to the FAA and have been developed as collaborative research and development software engineering projects with over a dozen of undergraduate and graduate students participating under her guidance.

Dr. Rusu is currently still working with and expanding her collaboration with Sikorsky Aircraft Corporation, Stratford, CT, on research projects related to rapid simulation environments, rapid prototyping and rotorcraft design tools.

Her grant from CT Space Grant is not the only award that Dr. Rusu has received recently. She received \$15K in Computer Science funding for a High School grant (\$10K from Google and \$5K as private donation) in 2012 to develop a 3-day teachers training workshop to provide secondary teachers with the skills necessary to create and integrate interactive, metaphor-based computer games into the curriculum to help students, ranging from middle to high school, learn computer science and engineering concepts and apply them throughout STEM. This was an outreach program offered to the local community. Over five urban, suburban and private school districts were included in the collaborative program with Fairfield University, entitled "Introducing Gaming Tools for Computing Education in STEM Related Curricula".

In her free time, Dr. Rusu enjoys spending time with family and friends, instilling an interest in math and science in her two children, gravitating around them and their myriad of afterschool/extra-curricular activities, good food, and summer travelling. ♦



Connecticut Corsair

Craig McBurney is the founder and manager of Connecticut Corsair. As a trained pilot and licensed FAA Mechanic, Mr. McBurney oversees the restoration to flight of Connecticut's State Aircraft, the "United Aircraft Corporation Legacy F4U Corsair."

Connecticut Corsair is dedicated to restoring the Corsair using state of the art technology and as many Connecticut-based businesses as possible. They train and mentor their interns and share with them years of experience, expertise and networking contacts. Therefore, they diligently work to identify the areas of interest to their interns first, and then place them in a specific project that will benefit the intern's own education and career. These projects vary from working on a full-motion, fully-enclosed, FAA-approved Corsair flight simulator to reverse-engineering, 3D CAD modeling, rapid-prototyping and manufacturing of legacy aircraft parts.

Connecticut Corsair is a small organization, therefore they look for interns that are goal-oriented "self-starters" and can work on one entire aspect of a project with limited supervision. The organization is a small, closely-knit group of passionate aircraft enthusiasts, historians and people who truly enjoy their work and in seeing their contributions make direct impact on the success of the overall project. They welcome all interns into the "Corsair Family," therefore ethics, trust, protecting

Intellectual Property, honesty and a commitment to complete assigned tasks are a must.

CT Corsair works very hard to match hard-working interns to their amazing network of Industry Partners. This non-profit applies the lessons learned from industry and academia to help guide interns to achieve their potential. "It is extremely satisfying to observe interns take ownership of an assignment and become an experienced Project Manager. It is even more satisfying to have Industry Partners extend job interviews and offers to interns as a result of their work with Connecticut Corsair," says McBurney.



From left to right: two NASA CT Space Grant interns Evan Bellanceau, Josiah Roberts, founder Craig McBurney, and Matt Sandberg of Connecticut Corsair



One of these interns was Evan Bellanceau who interned at Connecticut Corsair first as a NASA CT Space Grant intern. They then co-sponsored his University of Connecticut Senior Design Project, and through that project they introduced him to Trumpf in Farmington. Trumpf was impressed by him and he now works there as an Applications Engineer, merely a month or so after graduating.

cont.



The CT Space Grant Program provides opportunities for interns to work directly in their field of study. The first questions Connecticut Corsair asks a potential intern are designed to maximize the "return" the intern will receive by working with them and the CT Space Grant Program.

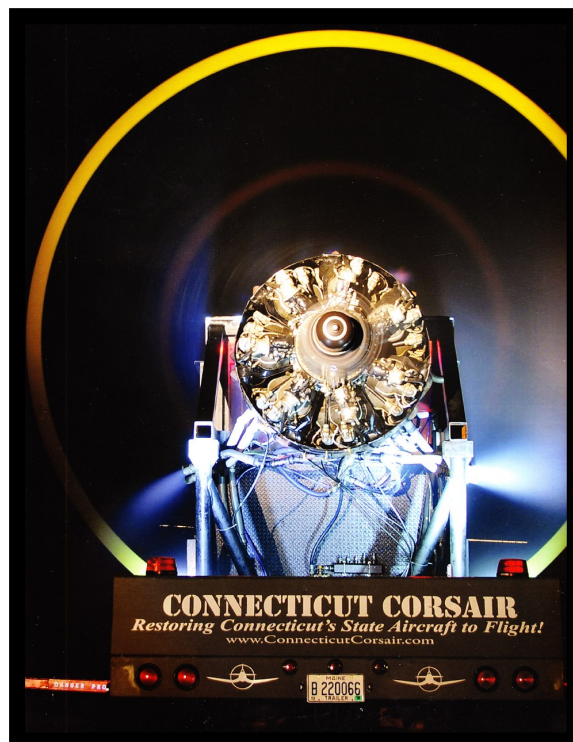
Mr. McBurney says, "Observing the growth of an intern as they succeed with us and are then encouraged to either continue with their education or enter the workforce with skills they developed with Connecticut Corsair is the most enjoyable aspect of the program to us."

Mr. McBurney also tells us they are constantly learning from their interns, as they are always in need of interns with mechanical, electrical, aeronautical, computer engineering and other related backgrounds. It is fascinating to learn the latest technologies from interns, and to solicit and take their advice on how to apply that emerging technology to the organization's efforts.

His advice to those about to enter the workforce is to gain as much "hands on" experience as possible during their studies. Task assignment and completion, team building, and project management are all resume items that enhance one's employment potential. Employers are also very interested in knowing that the interns have developed the proper "business sense" as in dealing with extremely sensitive issues such as Intellectual Property and

business ethics. Potential employers observe interns constantly, knowing that how they conduct themselves in school is a major indicator as to how they will conduct themselves in their careers.

Mr. McBurney ends with, "The definition of luck is when opportunity and preparation come together. We are therefore lucky we have the opportunity here in Connecticut to have the F4U Corsair as our heritage. We need to honor the contributions of our previous generations while we prepare our next generation of engineers by restoring Connecticut's Official State Aircraft to Flight. Restoration through Innovation & Education." ♦



For more information about Connecticut Corsair, please visit <http://www.connecticutscorsair.com/>

Mad About Science

Last summer, the University of Hartford hosted the Mad About Science program which was a collaboration of the Women's Education and Leadership Fund (WELFund), Summer Place, and the University's Office of Community Relations. The program is designed to inspire girls to pursue their love of science, technology, engineering and math (STEM), and to encourage future female scientists, engineers and mathematicians.



This past July, 16 participating girls from the Greater Hartford area experienced hands-on STEM programming in the afternoon and took part in athletics and other Summer Place activities in the morning. STEM activities included the creation of mousetrap powered cars, and glow-in-the-dark tee shirts. When asked what

they would like to be when they grow up, the girls' answers included "engineer at Pratt & Whitney," "forensic scientist," and "I'm not sure yet."

The program was free of charge for the sixteen participants, thanks to the generous support of the Connecticut Space Grant Consortium and WELFund. ♦

UNH Engineering Summer Experience

The University of New Haven hosted their Engineering & Science Experience 2012 in August, in part sponsored by CT Space Grant. The program was a week-long engineering and science camp for students entering 8th-10th grade. The camp was a great opportunity for students who have an interest in science, math, engineering, and technology. Activities included 2D video game designing, building of airplane models, and the creation of batteries and solar cells. The cost of the program was \$400. It covered instruction, supplies, lunch and a T-shirt. ♦

Planetarium

In September of 2012, the Glastonbury East Hartford Elementary Magnet School was opened in Glastonbury, CT. This magnet school has a science, global studies, and technology focus and is a NASA Explorer School. The crowning jewel of the new school is the new digital planetarium that will serve as learning venue for students at the school and in the region. The completion of the planetarium is slated for early 2013 with public programming to start in the spring of 2013. The Connecticut Space Grant Consortium has given seed money to the planetarium in an effort to help develop space programming in the plane-



tarium. Potential future programs include astronomy shows that correlate to school and state science standards, guest lectures, and planetarium summer camps. ♦



Connecticut Space Grant College Consortium

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Space Grant Award Recipients (Spring 2011-Spring 2012)

| | | | | |
|---|--|--|---|---|
| <u>Faculty Research Grants</u> | M. Keane (UConn) F. Carter (Yale) M. Wartenberg (UConn HC) | M. Curillo (Bridgeport) J. Garrigus (CCSU) S. Moses (CCSU) R. Parlock (Hartford) E. Jackson (Hartford) N. Guzman (Trinity) R. McCormick (Trinity) B. Horowitz (Yale) C. Chamberlin (Yale) J. Galtieri (UConn) H. Leask (UConn) J. Horwitz (UNH) A. Montejano (UNH) | S. Lanan (Hartford) J. Roberts (CCSU) L. Rubino (CCSU) M. Grotz (Hartford) J. Perry (Fairfield) L. Primovic (UNH) W. Axtell (Hartford) R. Adams (Hartford) D. Xenikakis (UNH) Y. Elleithy (Bridgeport) C. Pappalardo (Hartford) L. Kovacs (UConn) R. Gee (UConn) A. Sipperly (UNH) | <u>Senior Design Projects</u> D. Bautista (Hartford) J. Burke (Fairfield) A. Goldreich (CCSU) M. Rodriguez (Hartford) |
| R. Malla (UConn) I. Milanovic (Hartford) A. Rusu (Fairfield) A. Taylor (Yale) A. Hand (UConn HC) C. Othon (Wesleyan) | <u>Undergraduate Scholarships</u> B. Bernardo (SCSU) A. Fragoso (Yale) J. O'Rourke (Yale) D. Ramirez (UConn) J. Bradford (CCSU) L. Sewanan (Trinity) J. Daly (Hartford) S. Petkovsek (Trinity) M. Breland (Bridgeport) J. Young (UNH) B. Morneau (UNH) A. Battipaglia (SCSU) J. Keltz (SCSU) L. Aaron (Wesleyan) C. Malamut (Wesleyan) R. Vahora (Fairfield) B. Peters (Fairfield) E. Gravrand (Bridgeport) | E. Bellanceau (UConn) S. Connelly (Hartford) G. Cotnoir (UNH) R. Parlock (Hartford) M. Breland (Bridgeport) A. Sorensen Van Cleave (Hartford) C. Mazella (Hartford) | <u>Student Project Grants</u> C. Pawlowski (Yale) L. Rubino (CCSU) C. Guertler (Yale) M. Merkent (Hartford) G. Steen (Hartford) | <u>Helicopter Workshop</u> L. Fiondella (UConn) K. Severin (ECSU) J. McGuinness (CCSU) A. Sipperly (UNH) |
| <u>Faculty Seed Research Grants</u> J. Pallis (Bridgeport) E. Flynn (CT CoT) | | <u>Industrial Internships</u> | | <u>NASA Academy</u> S. Lamotte [Ames] (UConn) D. Violette [Goddard] (UConn) D. Hires [LARSS] (UConn) D. Mittelman [Marshall] (UConn) |
| <u>Faculty Curriculum Development</u> Al Gates (CCSU) | | | | <u>Student Travel Grants</u> K. Brown (UConn) T. Gionet (UConn) K. Reutenauer (CCSU) |
| <u>Research Collaborations</u> M. Robinson (Hartford) | | | | |
| <u>Graduate Fellowships</u> K. Burkhardt (UConn HC) Ngoc Nhung Ho (Yale) J. Roller (UConn) | | | | |

Can you solve this riddle?

A palindrome is a number or word that reads the same forward and backward. What is the smallest, and reported to be the only, non-palindromic integer whose cube is a palindrome?

Check your answer at www.ctspacegrant.org!

Quote:

"A person who never made a mistake never tried anything new."

Albert Einstein



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| Academic Affiliates | | Non-Academic Affiliates | Industrial Affiliates |
|---|--|--|--------------------------|
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| Eastern Connecticut State University Elizabeth Cowles, Ph.D. cowlese@easternct.edu | University of Connecticut Health Center Donald Peterson, Ph.D. peterston@uchc.edu | CCAT (Connecticut Center for Advanced Technology) * | UTC Research |
| Fairfield University Bill Taylor, Ph.D. htaylor@fairfield.edu | University of Hartford TBA | Discovery Museum * | Sikorsky Aircraft |
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| Trinity College Dr. John Mertens john.mertens@trincoll.edu | Wesleyan University Martha Gilmore, Ph.D. mgilmore@wesleyan.edu | Connecticut Invention Convention * | Kaman Aerospace |
| | Yale University Hector Arce, Ph.D. hector.arce@yale.edu | Connecticut Corsair * | GKN Aerospace Services |
| | | NEAM (New England Air Museum) | HABCO, Inc. |
| | | | Otis Elevator |
| | | | Carrier |
| | | | Dymotek |
| | | | Doncasters |
| | | | Wood Group |
| | | | ACMT |
| | | | SPX |
| | | | Tetra |
| | | | Capewell Components |

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Thanks to all who
attended the Fall 2012
Kick Off event!

CT Space Grant Lead Institution:



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