The value of failure

Students learn lessons in work on tiny satellite

BY TONY FITZPATRICK

Failure at a university is a word with bad connotations, unless you are involved in building experimental satellites that the U.S. Air Force and NASA find interesting.

A University aerospace engineer who works with students building experimental spacecraft says the student-built ones, which he calls “university-class,” have a strong advantage over aerospace-industry-built spacecraft. The reason is failure.

“Experimental failure is a basic element of university life, and from the university perspective a failed spacecraft is not necessarily a failed mission,” said Michael A. Swartwout, Ph.D., assistant professor of mechanical and aerospace engineering. “Students still learn from the mistakes, and no one is hurt by the failure.

“What universities can do for space science and engineering is tackle new or risky concepts—whether new technologies or different ways of operating spacecraft—and demonstrate a concept that might be used for a bigger spacecraft some day. This puts the risk on the student-side as opposed to Boeing, for instance, sinking millions of dollars into a dubious program.”

Swartwout said there has been a boom in spacecraft production at universities worldwide, with 30 university-built spacecraft launched over the past decade. Enabling this trend has been the electronics revolution of the late ’90s, which made possible the opportunity for universities to make much smaller vehicles with much cheaper price tags.

Reason to be proud

Team captains Kara Liefer, Ishi Bailew, Jasmine Hunt and Colleen Winter hoist the second-place trophy after the volleyball squad fell to Juniata College in the NCAA Division III National Championship match Nov. 27 at the Mayo Civic Center in Rochester, Minn. The day before, the Bears bumped No. 3 University of La Verne to reach the finals. WUSTL finished the season 32-7 overall, 12-0 in the University Athletic Association. For more on the volleyball, see Sat., Page 5.

Seligman to become Rochester president

BY JESSICA MARTIN

Seligman is a nationally renowned author and expert on legal issues related to securities and corporations. His book, The Transformation of Wall Street: A History of the Securities and Exchange Commission and Modern Corporate Finance, is widely regarded as the leading history of American law school life, and from the university perspective a failed spacecraft is not necessarily a failed mission,” said Michael A. Swartwout, Ph.D., assistant professor of mechanical and aerospace engineering. “Students still learn from the mistakes, and no one is hurt by the failure.

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Women runners make school history

The women's cross country team, which made Bears history Nov. 26 in Collegeville, Minn., placed 3rd at the NCAA Division III Championships.

A week earlier, the Bears defeated No. 10 University of Wisconsin-La Crosse, 3-1, in the quarterfinals.

Womenhooper win trophy title

The No. 5 women's basketball team won the Fourth Annual McWilliams Classic title, capping the season with a 100-90 win over No. 2 Illinois Wesleyan. The Bears improved to 12-3 overall and 8-0 in the UAA after defeating the visiting Titans, 54-34. 

An artist's rendering of Daniel Libeskind's proposed master plan for the World Trade Center site in New York.

Trade Center master plan, Studio Daniel Libeskind is designing or constructing more than a dozen projects in New York City.

The 1960s. Libeskind became an American citizen in 1965, earning an undergraduate degree in architecture from Cooper Union in 1970 and a postgraduate degree in history and theory of architecture at the School of Comparative Studies at Brown University in 1972.

A former director of architectural studies at the Academy of Art, he has also taught at the University of Toronto, Yale University, the University of Pennsylvania and the Karlsruher Hochschule fuer Gestaltung in Germany.

In 1989, Libeskind won the competition for the Jewish Museum in Berlin, and he founded Studio Daniel Libeskind the following year. Even before its 2001 opening of the museum, Libeskind has radiated a deliberately asymmetrical design filled with underfoot angles, underground passages and slit windows — a kind of architecture whose monumentality suggests something of a legend in architecture.

In 1997, Libeskind was made a Knight Commander in the Order of St. John, and in 2000, he was inducted into the American Academy of Arts and Letters. Libeskind's many honors include the German Architecture Prize (1999) and the Goethe Medal (2002).

In 2001, he became the first architect to receive the Hiroshima Peace Prize, given to an artist whose work promotes international understanding and peace.

Doors will open at 6:30 p.m. A book-signing will be held after the event and Breaking Ground will be available for purchase.

For more information, call 935-6293.

Libeskind

SPORTS

The Bears opened the 2004 volleyball season with a 5-2 win over No. 22 University of Puget Sound (21-1), which dropped to 20-2. Freshman Ross Vimr clocked a time of 22:33.3 in the 5K run to lead the Bears in the first three points of the match before Junior Kara Offutt grabbed a 4-of-5 sweep of No. 3 University of La Verne in the semi-final round.

The Bears closed the week on a high note as the Bears opened the week with a 92-56 win over Augsburg College on Nov. 28.

The Bears then posted a 1-1 record in the opening round of the McWilliams Invitational at Millstone Pool.

The Bears finished 27-2.

Junior Kara Liefer and sophomore Whitney Smith were named to the all-tournament team. The Bears opened the tournament with a 3-0 sweep of No. 3 University of La Verne in the semi-final round.

A week earlier, the Bears defeated No. 10 University of Wisconsin-La Crosse, 3-1, in the quarterfinals.

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**Sickle cell spotlight**

**DeBaun increases national awareness**

BY KIM LEYDIG

With Michael R. DeBaun, M.D., associate professor of medicine Sen. Jim Talent standing proudly in the background, 10-year-old Isaac Singleton Jr. can hardly contain his excitement.

"I want to tell you about my mom, and how I deal with sickle cell disease," Samaritans said. "Sickle cell affects me and sometimes I have to stay in the hospital for long time. I need to be careful when I play basketball because I get tired faster than other kids."

"I'm excited about this stamp because it will help more people learn about this disease."

Isaac hasn't been in pain since the start of this school year — and that's allowed him to dedicate his time and energy toward campaigning for fifth-grade class president at St. Louis Elementary School.

The commemorative postage stamp aims to increase awareness and educate the public about sickle cell disease and to encourage early testing.

Sickle cell disease, an inherited disorder of the red blood cells, is the most common genetic disorder in African-Americans, but it affects all ethnic groups as well.

The disease affects one in 400 African-American infants — and 20 percent of those children will suffer a silent stroke before they finish high school.

"This stamp helps raise visibility and shows the community that we can take on this disease and beat it," he said. "Sickle cell disease has been under the surface for far too long. It's time to put it under the national spotlight."

And this fall Talent delivered that he will announce that President George W. Bush signed the Sickle Cell Treatment Act. The legislation, initiated and led by Talent, aims to treat and expand services for patients with the disease.

Talent became an advocate for sickle cell disease after he visited St. Louis Children's Hospital and toured the sickle cell disease unit two years ago.

The comprehensive health-care legislation will increase funding for treatment and research efforts, expand awareness about the disease and provide counseling about who is at risk for having a child with the disease. Our

Grant boosts sickle cell disease programs

Children and teenagers with sickle cell disease face many barriers beyond health-care challenges.

An estimated 700 children and teenagers in the St. Louis metro area have sickle cell disease.

And fewer than 25 of these kids graduate from high school or find more than an entry-level job.

Most of them are unable to pursue higher education at a college or vocational school.

The school's effort to help longstanding sickle cell disease complete high school and find a rewarding job and lifelong leadership training, the Centers for Medicare & Medicaid Services recently awarded the Sickle Cell Disease Medical Treatment and Education Center at the University of a $24,683 grant.

Nanomedicine research technique advances heart care

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**Nanomedicine research technique advances heart care**

Miniscule, carefully engineered "nanoparticles" can detect and treat very early stages of clogged arteries. The nanoparticles, thanks in large part to research at the School of Medicine, are the first to translate this breakthrough into clinical advances.

Funded by the National Heart, Lung, and Blood Institute, this grant will support a biomedical research partnership between the School of Medicine and several commercial partners, including Kereos, a primary research systems, Bristle-Myers Squibb Medi cal Imaging and Dow Chemical.

The grant is an advancement of the medical school's Biomedical 21 initiative, which focuses in part on translational research and biomedical imaging.

"We've developed a way to take images of very early arterial plaques, before they are detectable by any other means," said principal investigator, Samuel A. Wickline, M.D., professor of medicine and biomedical engineering at the School of Medicine who received his Ph.D. in biomedical engineering & Applied Sciences.

"With this grant, we'll be able to focus on fundamental laboratory research and the development of new, investigational drugs," Wickline and co-investigator Gregory M. Lanza, M.D., Ph.D., associate professor of medicine and biomedical engineering, are co-founders of Kereos.

Hardened or clogged arteries, a condition called atherosclerosis, result from the accumulation of fatty plaques on the inner walls of blood vessels. As a plaque begins to form, a crowd of small blood vessels, called capillaries, develop around the site. Wickline and his colleagues designed a way to image those young capillaries, thereby predict the locations that will soon fall prey to atherosclerosis.

"This technique uses specially engineered nanoparticles that serve as mailmen — researchers will tell the particles exactly what kind of cell to find and give them a package to deliver when they arrive."

In a study published in 2003, Wickline's team packed nanopar ticles with two component molecules that latch onto small, rapidly growing capillaries, and an imaging agent called gadolinium, which shows up as a bright spot on a magnetic resonance image.

Using rabbits, they found that arteries that were developing dangerous capillaries had gadolinium signals twice as bright as normal arteries.

The researchers have shown that this technique can also help distinguish between stable plaques and those that are about to break, fragments of plaques on a common cause of heart attacks or strokes.

Now that their technique has been proven effective in animals, the researchers will use the new grant to develop imaging agents that can be used in humans. They also hope to design drugs that can目的地 deliver nanoparticles to prevent a future heart attack or stroke.

"Our ultimate goal is to change the usual course of atherosclerosis by using imaging techniques to determine who is likely to have a stroke or heart attack, and then target drugs to the site of the very earliest stages of disease," Wickline said.

Although this grant does not directly fund clinical trials, Wick line believes the team's research will be ready to be tested on pa tients in the next 2 to 3 years.

And, because tumors also require new populations of capil laries, the team believes these techniques may also help detect very early cancers at the beginning stages of tumor development.
**University Events**

**Poised on a Knife Edge • The Role of Business Intelligence**

**How to submit 'University Events'**

Submit "University Events" forms to Georgia Proctor, Social Sciences Information, 4th Floor, Greene Library. Please see calendar.wustl.edu for detailed instructions.

**Lectures**

**Friday, Dec. 3**

3 p.m. George Warren Brown School of Law Lecture. Lecture Hall, 630 S. Grand Blvd. Free, open to the public. 935-5676.

4-6 p.m. Biochemical & Biophysical Seminars.(Friday 3-5 p.m.) Center for the Study of Cardiovascular Diseases. F. David Hartshorne, dir. 747-4141.

**Saturday, Dec. 4**

10 a.m. - 2 p.m. Conference; "From the Heart: A Symposium on Cardiovascular Disease." St. Louis City Community College, 3200 S. Illinois St. 725-8271.

6 p.m. - 9 p.m. Conference; "From the Heart: A Symposium on Cardiovascular Disease." St. Louis City Community College, 3200 S. Illinois St. 725-8271.

**Monday, Dec. 6**

8 a.m. - 9:30 a.m. Conference; "The Competent Leader." Toastmasters International, 5 N. Jackson Ave. 935-4444.

5:30 p.m. - 6:30 p.m. Conference; "From the Heart: A Symposium on Cardiovascular Disease." Missouri Heart Institute, 650 North Market Blvd. 362-0183.

9 p.m. - 10 p.m. Conference; "From the Heart: A Symposium on Cardiovascular Disease." Missouri Heart Institute, 650 North Market Blvd. 362-0183.

**Tuesday, Dec. 7**

8 a.m. - 9:30 a.m. Conference; "From the Heart: A Symposium on Cardiovascular Disease." Missouri Heart Institute, 650 North Market Blvd. 362-0183.

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Acetobacter relatively little-studied paper on the future of university-a satellite not much bigger than a technology — one that is implement- tion as an exercise in his fall stu- dents are putting the finishing from the sweat equity of about 60 past two years has benefited Bandit's outstanding feature is Bandit is designed to launch a another spacecraft, making it a in use. Successful mission report. younger target of about 3 centimeters. itself from the sweat equity of about 60 past three years. Bandit's student project manager for the

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University of Missouri in St. Louis.

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Production Editor

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Dec. 3, 2004

Washington University in St. Louis

Vol. 29, No. 16

Satellite

Bandit has roots in Project Aria

— From Page 1

This in turn led to Swartwout developing the modus operandi of developing a "dispos- able" spacecraft that function over the short time frame of a few weeks. The hope, Swartwout said, is that someday an innovation de- veloped by students at a university will become a "disruptive" tech- nology — one that is implement- ted and alters the status quo of spacecraft design. He might have reason to celebrate: Swartwout hails from the University of Utah, where a satellite not much bigger than a computer mouse was recently developed.

Swartwout recently presented a paper at the American Astron- omers Conference on a group of university- class satellites at the 18th Annual American Astronomers Conference at Utah State University. Bandit is similar in size to the hottest technology class in space- craft design, Cubesats. These tiny payloads usually weigh less than 2 pounds, with their elec- tronics occupying several inches of space. While Cubesats are self-suffi- cient crafts, Bandit will depend on a mother ship for recharging its batteries and communicating with the mother ship.

Satellites at Utah State University.

While most of Bandit's design has been the product of students, a Washington, D.C.-based company, Planetary Systems, has pro- vided some recent input. In January of this year, the National Aeronautics and Space Administration announced its plan for developing a group of small satellites that will be used for various purposes, including monitoring the Earth's climate and providing data for scientists. The hope is that these satellites will be able to provide valuable information about the Earth's environment and help improve our understanding of the planet.

Instead of waiting for the government to fund these satellites, Bandit's creators have decided to develop their own, relying on grants and donations from the private sector. In the past, the project has received support from NASA, the National Science Foundation, and private companies, including Google and SpaceX.

As the project has grown, so has its scope. Bandit's founders have expanded their ambitions from simply monitoring the Earth's climate to exploring the possibility of using satellites to study other planets. In the future, they hope to launch a fleet of Bandit satellites to study a variety of phenomena, from the movement of tectonic plates to the behavior of storms on other planets.

In the meantime, Bandit is providing valuable lessons for the next generation of space engineers. By working on the project, students are gaining valuable experience in spacecraft design and construction, as well as in the fields of electronics, software engineering, and project management. They are also learning about the importance of teamwork and collaboration in achieving a common goal.

Bandit is an example of how universities can use their resources to support innovative projects that could have a significant impact on society. By involving students in the design and development of small satellites, universities can help foster a new generation of engineers and scientists who will be able to tackle some of the world's most pressing challenges.
**Tango legend Winkler to present dance, workshops Dec. 10-12**

**WASHINGTON UNIVERSITY IN ST. LOUIS**

Tango legend Brigitta Winkler will host a weekend of dance and workshops Dec. 10-12 for the University's Tango Group. Winkler, a native of Berlin, is one of the world's foremost teachers and performers of tango.

On Dec. 10, Winkler will host a free tango and tango vals dance from 7 p.m.-1 a.m. The event will begin with a half-hour introduction to tango history and dancing and also will include, at 9:15 p.m., an introduction to authentic Argentine-style tango.

The event is free and open to the public and will be held in the Olin Hall Lounge.

In addition, Winkler will lead a series of tango workshops at 1, 2:45 and 4 p.m. Dec. 11 and at 2 and 2:45 p.m. Dec. 12. The cost for each class is $20, and a discount is available for the series.

Beginners are welcome. Workshops will take place in the Mudd House Multipurpose Rooms. Winkler is known for her exquisitely creative, clear and understanding of the dance and music.

In 1987, Winkler co-founded the highly respected Tanzart studio in Berlin as well as the internationally acclaimed Tango Muier, a pioneering dance company exploring the boundaries between tango and contemporary dance.

In her classes, Winkler integrates more than 20 years of experience of teaching and performing tango with techniques learned from Body-Mind Centering, an experimental approach to movement re-education. For more information, call Sharon Sellers at 952-698-9020 or online to cec.wustl.edu/~hs3.

**Campus Watch**

The following incidents were reported to University Police Nov. 15-19. Investigators are seeking any information that could assist in investigating these incidents are urged to call 935-5555.

**Nov. 15**

8:40 a.m. A coordinator for academic programs reported that a window on the east side of January Hall was damaged by an unknown object. The window has metal bars in the glass, and two small panes of glass were damaged. The damage occurred between 8:30 p.m. Nov. 18 and 6:30 a.m. Nov. 19. Maintenance was notified. An investigation is continuing.

**Nov. 20**

1:30 p.m. A person was observed inside of Ridgely Hall with the door locked. The subject has been arrested on campus in the past on a charge of trespassing. The suspect has active fugitive warrants from St. Louis County and Police, as well as the Ferguson Police Department. The suspect was arrested.

**Nov. 30**

5:35 p.m. A student reported that sometime between Nov. 22-24, an unknown person broke into his vehicle parked on the top level of Snow Way Garage and stole approximately 40 CDs. Also, between Nov. 24-30, an unknown person broke into his vehicle and stole his two sub-woofer speakers. Total loss is estimated at $5,450. An investigation is continuing.

9:29 p.m. — An investigation of an alarm sounding at Olin Library revealed that an unknown person cut a padlock, disabled an alarm and bad check, and one report each of disturbance, assault, suspicious person, burglary, fraud and larceny.

**Crime alert**

On Dec. 1, University Police released the following crime alert:

A person reported being approached by a suspect after exiting his car in the 700 block of Interstate Avenue Nov. 30. The suspect displayed a handgun and demanded the person's wallet. The person initially delayed in complying with the suspect's demand, and the suspect struck him in the face. The person gave the suspect his wallet, and the suspect fled on foot.

**Prevention**

• Avoid walking or jogging alone and never do so after dark.
• Always choose a well-lit path and avoid dark or vacant areas.
• Carry a whistle to summon help.
• Be alert to your surroundings. If you suspect you are being followed, run in a different direction; go to the other side of the street and yell or whistle for help or head quickly to a lighted area, a group of people or business.
• If you are confronted by a thief, give them what they want and don't chase them as they leave.
• Report suspicious persons or activity immediately to the police.
• Be extra cautious if someone approaches your car and asks for information.

**Responsible**

• Contact University City Police if you have any information that might assist in this investigation.
• Report suspicious activity/persons immediately to the University City Police.

**Apath — from Page 1**

St. Louis area.

"In the evening years, Apath has become well-established, branching out from our roots in hepatitis C to tackle several other important human viral pathogens."

Paul D. Olivo, M.D., Ph.D., president and chief scientific officer, joined Apath in 1998. He was a member of the Department of Internal Medicine from 1989-1998, conducting research that led to patents on methods for detecting infectious viruses.

He now holds an adjunct faculty position in the Department of Molecular Microbiology.

"In choosing Apath's research direction, we decided to work where the greatest need is," Olivo said. "There are just not enough treatments for viral infections. And because many viruses can be turned into weapons, our antiviral work ideally positions us to address biodefense concerns."

As a result of national defense concerns, the company has obtained more than half of its income from federal grants, supplementing income obtained from numerous patent licenses.

"Apath has been in the right place at the right time," Olivo said. "There is an element of luck involved, I suppose. But it's the sort of luck that comes from seeing what's needed and being prepared to take advantage of it." As a result, the company is expanding.

Michael G. Douglas, director of the University's Office of Technology Management, said: "We congratulate the owners and employees of Apath on their success. We're pleased to see a startup with beginnings at Washington University grow to generate such impressive value."

The University has more than 150 inventions stemming from research funded by the National Institutes of Health, with about half of these being licensed to private companies.

"Apath's success reflects the quality of research and discovery at the University, as well as the talents of the company's founders," Douglas said. "Apath serves as a model for other faculty members on how to capitalize on the value of their discoveries."

Apath has two laboratories and offices at the Nidus Center for Scientific Enterprise in Creve Coeur, Mo.

In addition to Rice and Olivo, three other employees have ties to the University. The company's grants coordinator and senior administrative director, L. Janet Mullen, is a former University employee. One of Apath's doctoral scientists graduated from the University, and another conducted postdoctoral research here.
Olin School names Beirne associate dean, director

James J. Beirne has joined the Olin School of Business as an associate dean and director of the Western Career Resources Center effective Dec. 1. Beirne replaces Gregory Hughes, who retired at the end of last year to pursue other opportunities.

"His experience, a disposition and a professional intelligence that qualifies him to be an ideal candidate to the pinnacle of achievement and success," said Olin School Dean Stuart L. Greenbaum, Ph.D. "James is an alumnus of Washington University at the University of Pennsylvania from 1985-1994, serving most of that time as director of career development and placement. Most recently, he managed the American Recruiting Program for Hewlett-Packard. From 1994-2002, Beirne worked in corporate recruiting at the University of Southern California, based in Los Angeles, and Brazil. He holds a master’s degree from the American Graduate School of International Management, and a bachelor’s degree in food marketing from St. Joseph’s University. Beirne is fluent in Spanish and Portuguese.

By ANDY CLENDENNEN

Sobol, 22; senior in Olin School

Travis Bollock, an Olin senior, died Saturday, Nov. 27, 2004, in a one-car accident in St. Charles (Mo.) County.

A St. Louis-area native, Sobol was a 2001 graduate of Cham¬bard College, and attended the University of Pennsylvania in 2003. Sobol was an alumnus of Washington University in St. Louis.

Beirne has experience, a disposition and a professional intelligence that qualifies him to be an ideal candidate to the pinnacle of achievement and success." said Olin School Dean Stuart L. Greenbaum, Ph.D. "James is an alumnus of Washington University at the University of Pennsylvania from 1985-1994, serving most of that time as director of career development and placement. Most recently, he managed the American Recruiting Program for Hewlett-Packard. From 1994-2002, Beirne worked in corporate recruiting at the University of Southern California, based in Los Angeles, and Brazil. He holds a master’s degree from the American Graduate School of International Management, and a bachelor’s degree in food marketing from St. Joseph’s University. Beirne is fluent in Spanish and Portuguese.

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and biomedical engineering
Dora Angelaki's research bridges neuroscience and biomedical engineering

By Gila Z. Reiches
Washington University
The allure of academia
Though always enchanted by the allure of research-based higher education, Angelaki approached her parents by agreeing to pursue a more-applied undergraduate degree. Their hope was that electrical engineering would satisfy their daughter's natural scientific talents and curiosity while preparing her for a more practical career than academia — and one that wouldn't take her too far from home. The plan was futile. Rather than squelch her academic yearnings, college fueled them.

During her studies, Angelaki, now the Alumni Endowed Professor of Neuroscience, was inspired by several articles she read that mentioned a newly emerging field called biomedical engineering. She decided it was the ideal opportunity for her to apply her engineering background to a more theoret- ical engineering; she moved away from her training in any of the biological sciences, she moved away from her training in any of the biological sciences. By her second year of graduate school, she had discovered her niche in an area of science she had never heard of before.

Unlike the more well-known senses of vision and hearing, few people notice their sense of balance; some trade knowledge for balance, let alone know what it's called. But the system of fluid-filled passages in the inner ear, collectively called the vestibular system, is critical for orienting our- selves in space and maintaining posture and equilibrium. Damage or disruption to the system can be devastating, resulting in dizziness. Angelaki could apply her knowledge of mathematics and computer science to understanding the network of cells that comprise the body's feats of balance, she is focused on maintaining her own.

An eye for research
Studying this interactive system requires a combination of tech- niques ranging from theoretical approaches to intricate animal models, to applied clinical investigations. Spatial orientation re- search, therefore, provides Angelaki with ample opportunity to achieve her personal career goal: learning something new every few months and incorporating it into her research.

"Dora is a scientific dynamo, and her boundless energy and enthusiasm are infectious for students and faculty alike. ... With her sustained commit- ment to excellence and her rigorous, quantitative approach to problems in neuroscience, Dora has made major contributions to the field."

David Van Essen

Dec. 3, 2004

Washington People

Dora E. Angelaki, Ph.D., graduate student Kim McArthur (left) and research associate Yong Gu, Ph.D., discuss data analyses for a project studying motion perception using a newly developed virtual reality apparatus that combines real motion and virtual stimulation.

Dora E. Angelaki, Ph.D., and biomedical engineering students discuss data analyses for a project studying motion perception using a newly developed virtual reality apparatus that combines real motion and virtual stimulation. The student is shown with her research advisor, David Van Essen, Ph.D., professor of neuroscience and director of the Laboratory for Neuroscience and Computation, at Washington University in St. Louis.

Washington University in St. Louis

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Washington University in St. Louis