

ABSTRACTS



PHOTO: DARSHAN PATEL

TULLE + TUBING = GLACIER

It was a cool concept for a hot event in February – a “glacier” created for one of the runway shows held during New York Mercedes Benz Fashion Week 2012. Designed, fabricated and installed by a team of thirty-two students enrolled in NJIT’s College of Architecture and Design, the translucent ice mountain became a wall-mounted backdrop for the show presented by NUMBER:Lab, an up-and-coming men’s sportswear company.

The team built a space-frame that was skinned with a stretch tulle fabric and then covered with individual “garments” made with flexible tubing and zip ties. Branching out like ice-crystal formations, these additions provided more texture and visual interest for the structure, which was 15 feet wide and 20 feet tall.

The project was an integral

Above: A “glacier” takes shape on the NJIT campus before installation in New York City.

part of the Fashion as Furniture course offered by Brooks Atwood, assistant professor in the School of Art+Design. Atwood is also a co-founder and principal of POD Design & Media, a New York-based studio working in the fields of architecture, product design and art direction specializing in advanced technologies. ■

SMART AID FOR BRAIN INJURIES

Individuals challenged by brain injuries or hydrocephalus have new technology to help them, thanks to Professor Gordon Thomas and Research Professor Reginald Farrow, Department of Physics, and their former doctoral student Sheng Liu '08.

The NJIT team has been awarded a patent for the NJIT SmartShunt™ under the title “No Clog Shunt Using a Compact Fluid Drag Path.” This unique device enables non-invasive wireless

monitoring of the extremely slow flow of cerebrospinal fluid and of tiny changes in pressure in a shunt that drains fluid out of the brain. Shunts are commonly used by patients suffering from severe excess pressure in the brain due to hydrocephalus or brain injury.

“A serious problem with shunts is that they may malfunction or become obstructed. The symptoms include a severe headache, but can be confusing, particularly when patients are small children,” says Thomas. Such uncertainty can lead to unnecessary and unpleasant surgical procedures or, alternatively, to postponing what could be life-saving medical interventions.

“The technology will enable patients and physicians to determine whether cerebrospinal fluid flow is, in fact, impaired,” adds Farrow. The device will also allow a better determination as to what medical procedures should be performed.

The SmartShunt, which includes components that reduce the potential for shunt obstruction, is designed to have a lifetime of more than a decade because it needs no internal power. “In addition, the SmartShunt will be a valuable new tool for research into what extent diet, motion and medication can improve the pressure and flow of the fluid in the brain,” Thomas says.

The NJIT team worked on this device for more than six years, supported by grants from the New Jersey Commission on Science and Technology and the National Institutes of Health. ■



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Research Professor Reginald Farrow



NJIT student Anthony Sorgi on stage at the most recent TEDx session.

IDEAS WORTH SPREADING

Greener building, urban aeroponic farming and industrial environmentalism were among the topics explored at NJIT’s March TEDx session, whose theme was creative, leading-edge strategies for sustainability. Speakers who included NJIT faculty and students shared their views with an audience gathered in the Jim Wise Theater on campus and with viewers worldwide.

TED, a nonprofit organization devoted to “ideas worth spreading,” first brought speakers from the worlds of technology, entertainment and design together for a conference in 1984. Communications technology has since made it possible for local groups to share their own TEDx talks with people around the globe.

The focus of last fall’s NJIT TEDx session was entrepreneurship and innovation. Those talks, now posted on YouTube, were so successful that NJIT decided to host another TEDx event. Kevin Ly, a biology major enrolled in Albert Dorman Honors College, has organized the TEDxNJIT events with help from other students, faculty and staff. Ly recently wrote an essay for the *Daily Record* about his involvement with TEDx at NJIT. Essentially, he wants to bring people together to discuss and “envision a world where we can use technology to build smarter buildings and create a better ecosystem that improves human health.”

Among the NJIT speakers at the March TEDx presentation were Donald H. Sebastian, senior vice president for research and development; Richard Garber, associate architecture professor noted for his sustainable building designs; Judith A. Sheft, associate vice president for technology development; and Anthony Sorgi, Dorman Honors scholar and creator of the New Earth Archive (<http://neweartharchive.org>).

Other speakers were Florence Hudson, an IBM executive who develops energy and environmental solutions for the company; Darren Molnar-Port, green building administrator for New Jersey’s Department of Community Affairs; David Rosenberg, whose company builds interior urban aeroponic farms; and Peter Spitz, chemical and energy industry blogger. ■

www.tedxnjit.com

Twenty-four teams representing 37 universities and 13 countries will compete by designing and building solar-powered, energy-efficient houses.

PHOTO: JONATHAN T. CANN



The eJoy House on the National Mall

SOLAR HOUSE TEAM BOUND FOR CHINA

Team NJIT, collaborating with China's Harbin Institute of Technology, will take part in Solar Decathlon China, to be held in that country in August 2013. Twenty-four teams representing 37 universities and 13 countries will compete by designing and building solar-powered, energy-efficient houses. Organized by Peking University, the event is co-hosted by China's National Energy Administration and the U.S. Department of Energy (DOE).

Last year at home, Team New Jersey, a collaboration between NJIT and Rutgers, created the eJoy House for the very competitive biannual Solar Decathlon sponsored by the DOE. Challenging traditional concepts and building techniques for energy-efficient homes, the prefabricated structure was first erected in the summer of 2011 on the NJIT campus. It was then disassembled and reassembled in Washington, D.C. on the National Mall, along with 18 other university-team entries. ■

<http://magazine.njit.edu/2012/winter/winter-2012-enjoy-house.pdf>

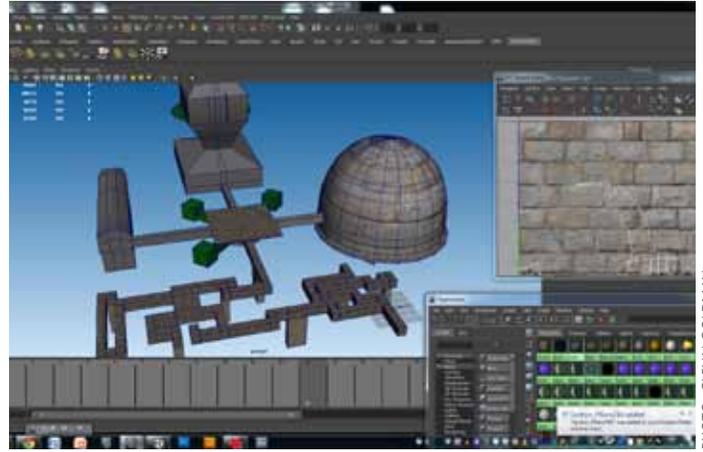


PHOTO: GLENN GOLDMAN

Benjamin Gross, digital design major and Dorman Honors scholar, described his team's 3-D creation "Labyrinth" as a puzzle-based exploration game requiring players to navigate an Indiana Jones-like maze.

GAME ON

As the clock started for Global Game Jam 2012 in January, nearly 70 NJIT students went into cyber-action, taking on the challenge of creating computer games in 48 hours or less. They comprised the largest number of teams fielded in New Jersey and ranked in the top 50 among 242 sites worldwide participating in the event sponsored by the International Game Developer's Association.

When the clock ran out, the NJIT teams had put nine new games online, boosting the total number of games produced by nearly 11,000 participants



PHOTO: GLENN GOLDMAN

Design student Danielle Esmaya was lead artist for the NJIT Global Game Jam team that built "Seed.Genesis," a game in which players control a "seed" planted in a rainforest.

in 47 countries to 2,209. This year's event focused on web and mobile gaming, with a number of games developed for Microsoft and Apple mobile platforms. Microsoft conducted a development workshop prior to the event and provided students who designed games on a Microsoft platform with 4G smartphones.

Assistant Professor of Architecture Andrzej Zarzycki, event coordinator at NJIT, says that interdisciplinary cooperation contributed greatly to the success of the university's teams, with digital-design and information-technology majors pooling their knowledge and skills.

Other faculty supporting the students in their weekend game quest included Professor Glenn Goldman, director of the School of Art + Design; Kunal Majmudar, adjunct professor of digital design and composer who helped the students integrate sound and music; Taro Narahara, assistant professor of digital design and game-development instructor; Marc Sequeira, lecturer in the information technology program, College of Computing Sciences; and Lecturer Augustus Wendell, digital-design coordinator. ■

POINT BY POINT

www.njithighlanders.com

NIH CHAIR FOR NADIM

Neural researcher Farzan Nadim, professor in the departments of mathematical sciences and biological sciences, has been appointed chair of the National Institutes of Health (NIH) Sensorimotor Integration Study Section. For the past two years, Nadim has been a member of this scientific review panel, whose work relates to his own research. He will be chair from July 2012 through June 2014, the remainder of his term, and continue to help review grant applications for investigation of nervous-system sensory input and motor output.

"This is a major honor and recognition for Dr. Nadim's

prominence as a scientist," says Fadi Deek, dean of the College of Science and Liberal Arts. "It is a significant responsibility and commitment to the biological and biomedical research community."

Nadim researches synaptic dynamics that contribute to the generation and control of oscillatory neuronal activity. Synaptic dynamics are found in all parts of the nervous system, and he has worked to identify new mechanisms through which the activities of fast and slow oscillatory networks are coordinated. Greater understanding of this physiological function at the cellular and network levels can yield new insights into disorders such as epilepsy and Parkinson's disease. ■

END NOTES

Professor Nirwan Ansari, Department of Electrical and Computer Engineering, was an invited speaker at the Worldwide Security and Mobility Conference held in Princeton, New Jersey, addressing issues of quality in broadband access.

Cesar Bandera, adjunct professor in the School of Management and College of Computing Sciences, presented the results of his federally funded research in health care delivery via mobile devices at the third international mHealth Summit and Society for Applied Learning Technologies Conference.

Mohamed Mahgoub, assistant professor in the Department of Engineering Technology and

director of the Concrete Industry Management Program, has been appointed chair of the American Concrete Institute's Committee 555, Concrete with Recycled Materials.

Professor Angelo J. Perna, director of the Ronald E. McNair Post-baccalaureate Achievement Program at NJIT, has been recognized by Omega Chi Epsilon, the chemical engineering honor society, for four decades of dedicated service to the organization.

Associate Professor Rongfang Liu, Department of Civil and Environmental Engineering, spoke about the construction of China's high-speed rail lines at the 91st Transportation Research Board Conference in Washington, D.C.

GREAT WEST BASKETBALL HONORS



PHOTOS: LARRY LEVANTI PHOTOGRAPHY

Isaiah Wilkerson

The Great West Conference named NJIT senior Isaiah Wilkerson the 2011-12 Player of the Year in men's basketball. In addition to this award, Wilkerson was a repeat honoree on the all-conference first team and his teammate, Chris Flores, was a repeat second-team honoree.

A 6-foot-3 forward/guard from Staten Island, New York, Wilkerson was the leading overall scorer in the conference, averaging 16 points in 29 games overall, and he ranked fifth in the conference with an overall rebounding average of 6.6 per game. He also tied for the conference lead with 1.6 steals per game. NJIT's career Division I leader in points (1,523) and rebounds (596), Wilkerson has had the finest season of a stellar four-year career, connecting on 45 percent

Denisa Domiterova

of his shots from the field, 39 percent of his 3-point tries (41 made) and 81 percent of his free throws, while handing out 61 assists and making a career-high 52 steals.

Denisa Domiterova, a freshman from Zvolen, Slovakia, was selected as Great West Conference Newcomer of the Year, tabbed second-team honors and was named to the All-Newcomer Team. Domiterova, who leads the conference in three-pointers made (27; 2.7), ranks 23rd in the nation. In her first season at NJIT, Domiterova has knocked down a team-leading 72 three-pointers. The rookie guard also leads the conference in three-point percentage (37 percent; 72-for-194). ■

