NEWS BRIEFS

INSTITUTE FOR SCIENCE AND ENGINEERING SIMULATION

Photo courtesy of the U.S. Air Force

The work of researchers at UNT's new **Institute for Science and Engineering Simulation** will assist the U.S. Air Force in maintaining and extending the life of its aging aircraft.

UNT earned $2.2 million in 2008 and will receive an additional $6.36 million in 2009 from the U.S. Air Force Research Laboratory to fund the Institute for Science and Engineering Simulation. The science and engineering developed at the new institute will assist the U.S. Air Force in maintaining and extending the life of its aging aircraft.

Researchers in the Department of Materials Science and Engineering and the Department of Chemistry will use the facilities of two nationally recognized centers at UNT — the Center for Advanced Research and Technology (CART) and the Center for Advanced Scientific Computing and Modeling (CASCaM) — to study the causes of jet engine failure and develop the tools and knowledge needed to build stronger, more durable engines. ISES will serve as a hub to connect experimental, characterization and simulation activities on collaborative projects, and to provide short courses and workshops.

While the work is funded by the military, the findings also could apply to the aerospace industry as a whole. The institute will be directed by **Rajarshi Banerjee** , associate professor of materials science and engineering. Other faculty researchers include, from materials science and engineering, Jincheng Du, Alan Needleman, Rick Reidy, Thomas Scharf and Srinvasan Srivilliputhur; and from chemistry, Tom Cundari and Angela Wilson.

DIGITIZING PLANT COLLECTIONS

Photo courtesy of Botanical Research Institute of Texas

William Moen is digitizing the labels on plant specimens for the Botanical Research Institute of Texas so that the information can be put into an online database.

Through a $738,075 grant from the Institute of Museum and Library Services, UNT's **Texas Center for Digital Knowledge** will work with Fort Worth's Botanical Research Institute of Texas to transform data from handwritten and typed labels on the institute's dried plant specimens into a form that can be processed by computers. The project, "High-Throughput Workflow for Computer-Assisted Human Parsing of Biological Specimen Label Data," is led by **William Moen** , director of TxCDK and associate professor of library and information sciences.

BRIT is the largest independent herbarium in the Southwest. Its more than one million specimens, which date back to the 18th century, provide a record of the diversity and distribution of plants over time, including the movement of invasive species and the loss of endangered species. The institute plans to put the data from specimen labels into an online database, but the older labels are difficult for a computer to decipher with off-the-shelf optical character recognition software.

Moen will work with BRIT staff members to identify a sample of about 1,000 labels and develop software and applications that can be used to transform the printed data. The research grant supports the work of three UNT graduate students on the project. Results will be posted

online and shared with managers of herbaria and other natural history collections across the country.

ITALIAN RENAISSANCE

With a fellowship sponsored by the Harvard University Center for Italian Renaissance Studies at the Villa I Tatti in Florence, **Benjamin Brand** is exploring the ways in which music, ritual and the visual arts shaped the identities of religious communities in central Italy. The assistant professor of musicology is working to complete his book, *Cathedral Liturgies in the Golden Age of the Tuscan Communes, 1100-1300*, as one of 14 post-doctoral scholars chosen by an international committee to study at the villa in 2008-09.

Brand draws on the disciplines of art and ecclesiastical history as well as musicology in reconstructing the music and ritual performed at such well-known centers as Florence and Siena and the more obscure Lucca, Pistoia and Arezzo. He also is examining the broader political and theological effects of these liturgies on the civic culture of the Tuscan city-states.

His previous work, which focused on music and musical institutions in 15th century Tuscany, was published in the *Journal of Musicology, Early Music History* and *Plainsong and Medieval Music*.

CENTER FOR THE STUDY OF INTERDISCIPLINARITY

With interdisciplinary research widely regarded as the future of academia, and the world's problems seldom fitting within the boundaries of a single discipline, UNT has established the nation's first **Center for the Study of Interdisciplinarity**. The center draws together scientists, engineers, policymakers and communities to develop interdisciplinary approaches to research and education.

Robert Frodeman, professor of philosophy and editor in chief of the forthcoming *Oxford Handbook of Interdisciplinarity*, is director of the center. He says interdisciplinarity is the key to "shifting knowledge production to useful purposes." For example, in a project supported by a $393,688 National Science Foundation grant, the new center will study the peer review of research grant proposals to examine how public science agencies make sure the research they fund is relevant to 21st century society.

J. Britt Holbrook, research assistant professor of philosophy, is the center's assistant director. Holbrook is spearheading the center's efforts to partner with faculty from across campus. Other faculty members involved include **James Meernik**, professor of political science, and Ricardo Rozzi, associate professor of philosophy and director of the **UNT-Chile program**.

GLOBAL RIVERS PREMIERE

Photo courtesy of Melinda Levin

Melinda Levin earned a grant to help support *Global Rivers*, a documentary about the impact of some of the world's major rivers on the cultures surrounding them.

The world premiere of *Global Rivers* — a documentary about the history, recreation and economic and cultural impacts of some of the world's major rivers — took place at the biennial congress for Centre International de Liaison des Ecoles de Cinéma et de Télévision in Beijing, China, in November 2008. The premier international organization for film and television schools, CILECT provided about $20,000 in seed money for the documentary, the first U.S. project it has funded.

Melinda Levin, associate professor and chair of the radio, television and film department, is one of three executive producers of the documentary. The 30-minute version of the film that premiered in Beijing included footage from the Amazon, Danube, Ganges, Mississippi and Rio Grande rivers. The final hour-long version also will include the Nile, the Mekong in Thailand and the Los Angeles River in California.

The idea for the documentary came in part from previous collaborations between Levin and **Irene Klaver**, associate professor of philosophy and religion studies and director of UNT's **Philosophy of Water Project**, who served as a consultant and co-director of the Rio Grande portion of the film. She is a member of the Water and Cultural Diversity expert advisory group for UNESCO's International Hydrological Programme.

In addition to creating a compelling story, the project tested advanced-technology high-definition cameras, equipment, post-production software and file-sharing technologies.

WOMEN AND METALSMITHING

Photo courtesy of Ana Lopez

Ana Lopez, who researches the history and practice of metalsmithing, uses alchemical symbolism to portray various aspects of interpersonal relationships. This piece is titled "Alchemist Wedding Band."

Ana Lopez, assistant professor of metalsmithing and jewelry, traveled to Finland in fall 2008 to present her research at a conference at the University of Helsinki. Her paper, "The Changing Nature of Blacksmithing Instructional Systems in America and its Effect on the Participation of Women, 19th Century to Present," is based on her background in both the history and practice of metalsmithing.

Exploring how the mid-20th century movement of crafts into university settings affected the participation of women in traditionally masculine crafts, she found that broader cultural shifts made the greatest difference. Changing perceptions of women created new opportunities for them in many fields, including blacksmithing. That, coupled with the endangered nature of blacksmithing as a profession, created a more welcoming atmosphere for women interested in the craft.

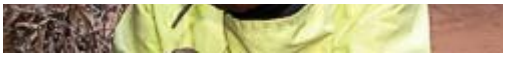
Lopez also has written a reference text, *Metalworking Through History*, which will be published by Greenwood Press. The book covers broad elements of the history of metalsmithing and the cultures that have produced it. In her recent creative work, Lopez uses alchemical symbolism to portray various aspects of interpersonal relationships.

ENDANGERED LEGLESS AMPHIBIAN

Photos courtesy of David Wojnowski

Kenya liaison Greshon Kisombe holds a Sagalla caecilian. **David Wojnowski** partnered with the National Museums of Kenya to study villagers' perceptions of the critically endangered legless amphibian.

David Wojnowski, assistant professor of teacher education and



administration, partnered with the **National Museums of Kenya**'s herpetology department to study Kenyan villagers' perceptions of the Sagalla caecilian, a harmless fossorial legless amphibian rated critically endangered by the World Conservation Union. Villagers often kill the endangered amphibian, similar in appearance to worms or snakes, when tilling their fields.

As a follow-up project to a study by the museum that identified the amphibian as a new species, Wojnowski used results from a naming contest to examine whether the local people of Sagalla would better differentiate the creature if a name were created in their indigenous language. Initial findings show that identifying the Sagalla caecilian by the local name, "Kilima-mrota," suggested by a high school girl who won the contest, allows those associating the amphibian with the new name to differentiate it from worms and snakes.

Wojnowski says education, coupled with respect and understanding of indigenous knowledge, has worldwide implications for saving vanishing species.

HOSPICE AND VIDEOPHONES

Hospice care for dying patients has grown rapidly in the last 20 years, but less than 25 percent of the dying in the United States access this service, says **Elaine Wittenberg-Lyles**, assistant professor of communication studies. She is part of a national research team that recently finished data collection on a pilot program — **The Telehospice Project** — enabling patient and family participation in hospice interdisciplinary teams through the use of videophone technology.

Barriers to the provision of hospice services, especially in rural areas, include shortages of workers and restrictive service areas based on mileage and driving time. Telecommunications and information technology can bridge the geographical gaps and enhance care delivery, particularly significant for patients in underserved areas or with limited support from family or other caregivers.

Funded by a $275,000 grant from the National Cancer Institute, Wittenberg-Lyles and her team tested the feasibility of caregivers in Missouri using videophones to participate in hospice interdisciplinary teams. Preliminary data analysis shows improved outcomes for patients and families using videophones, specifically because of the improved services and care that result from the family participation the technology allows.

The interdisciplinary research — which includes the areas of nursing, social work, bioinformatics and communication — proves that technology such as videophones can be effective in creating a social presence and aiding in communication.

SAFETY IN TRUCKING

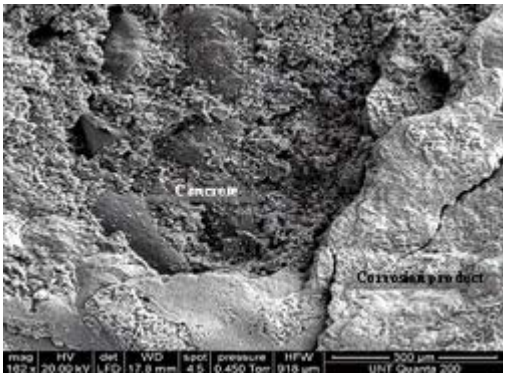
Steve Swartz, assistant professor of logistics management in the **Center for Logistics Education and Research**, is studying safety in the trucking industry. Specifically, he is examining the behavioral factors affecting the decision-making of commercial drivers regarding "risky" behaviors such as speeding or tailgating. Through the study, trucking companies can identify and emphasize programs that will help improve the safety of their operations, ultimately resulting in fewer accidents involving commercial motor vehicles.

For the multi-year project that began in 2007, Swartz is studying variables such as perceived safety climate, job satisfaction, turnover intention, risk aversion and self-confidence. He also has examined drivers' and safety professionals' perceptions of the effectiveness of various safety-related programs. His initial findings suggest that drivers with confidence in their own safety performance and drivers at companies with a safety climate perceived to be supportive are less likely to consider engaging in unsafe driving behaviors.

The Texas Motor Transportation Association Safety Management Council and the Commercial Vehicle Enforcement division of the Texas Department of Public Safety provided industry data for the study. In addition, more than 60 firms were involved, from small, intrastate companies with fewer than 50 employees to large, interstate trucking companies with thousands of drivers. Swartz's articles related to transportation safety have been accepted for publication in *Transportation Journal* and *Journal of Transportation Management*.

ROAD DURABILITY

Photo courtesy of Seifollah Nasrazadani



Seifollah Nasrazadani conducted research for the Texas Department of Transportation that showed that concrete poured over already-corroded rebar steel is prone to cracking.

Combating increased road ruts, cracks and surface wear due to rising car and truck traffic, the Texas Department of Transportation turned to UNT's **College of Engineering** and **Center for Advanced Research and Technology** to study the problem. CART's high-powered microscopes and other state-of-the-art equipment can test and analyze materials from the micro to atomic level. **Seifollah Nasrazadani**, associate professor of engineering technology, is looking into new ways to analyze paving materials through a grant from TxDOT, developing new protocols for their characterization based on applications of Fourier transform infrared (FTIR) spectroscopy.

As a result of a previous TxDOT grant, he used CART's environmental scanning electron microscope, successfully applying the FTIR technique to show that concrete poured over already-corroded rebar steel is prone to cracking.

The impact of the work is significant. The state of Texas has more than 9,400 lane miles of pavement, and TxDOT spends more than 50 percent of its annual construction and maintenance budget on pavement. Poor-quality materials increase the need for road repairs, costing taxpayers money and causing traffic slow-downs that waste time and fuel. Nasrazadani presented his research results in January at the annual meeting of the Transportation Research Board of the National Academies, advisors to the nation on science, engineering and medicine.

KATRINA SURVIVORS

Photo courtesy of FEMA/Andrea Booher

Cecilia Thomas studies the trauma of displacement for older African American survivors of Hurricane Katrina. Pictured is New Orleans' Lower 9th Ward after the storm.

The destruction of Hurricane Katrina on the Gulf Coast caused massive displacement of survivors, including many who are African American, poor and elderly. **Cecilia Thomas**, assistant professor of social work, is exploring the impact of the trauma on older African American survivors and their processes of coping

and adapting with an award of $100,000 from the Hartford Geriatric Social Work Faculty Scholars Program, funded by the John A. Hartford Foundation.

Preliminary results indicate survivors' mental processes are intrinsically different now than in the immediate aftermath of the storm. Through in-depth interviews, Thomas is finding that as survivors reflect on the past, they express loss regarding previous possessions, distance from family and a sense of community.

While a large number of the Katrina survivors have indicators of depression and struggle financially, they show evidence of resiliency, and a majority make meaning of their circumstances through religion and spirituality.

The study will help social workers understand coping experiences in a cultural context, which will help them better assess needs and provide services.

GEN Y STUDENTS

Photo courtesy of Bharath Josiam

Bharath Josiam, pictured in Sydney, Australia, is part of an international team studying the work attitudes of Generation Y hospitality students. Results from the study have been published and presented internationally.

A generation's viewpoint about work can affect absenteeism, turnover, and work quality and quantity. **Bharath Josiam**, associate professor in the **School of Merchandising and Hospitality Management**, joined an international team to study Generation Y hospitality students — those between the ages of 18 and 29. The research examines the students' attitude toward work and its impact on work performance and job satisfaction.

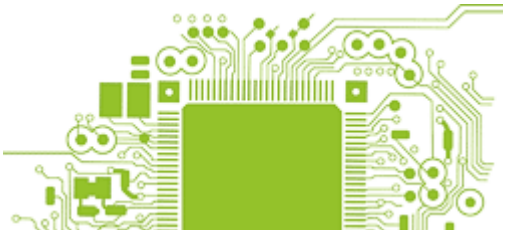
From surveys of more than 200 students, Josiam's research team discovered that the more Gen Y students work, the less cynical they are. Their strong work ethic includes a positive attitude about job promotion, even if one or more of their parents has been laid off in the past.

The researchers — which include **Christy Crutsinger**, associate dean of the School of Merchandising and Hospitality Management and faculty special assistant to the provost, and Johnny Sue Reynolds, retired associate dean, along with others from England, Scotland, Northern Ireland and South Korea — found little difference regardless of students' gender or country. Josiam says the similarities reflect a globalized hospitality industry with similar job duties worldwide.

Refereed papers from the study have been presented at conferences in China, India, Australia and Malaysia and accepted for publication in three international journals, including the *Journal of Hospitality and Tourism Education*.

DIGITAL SYSTEMS

Saraju Mohanty, assistant professor of computer science and engineering, received a three-year National Science Foundation grant to study the power and performance of digital systems through computer-aided design modeling. The project, "A Comprehensive Methodology for Early Power-Performance Estimation of Nano-CMOS Digital Systems," received $200,000. UNT is the lead institution on the project with support provided by



Texas A&M University.

The modeling is vital to develop new circuits and systems for portable applications in which battery life is critical. The models can be used by design engineers to estimate power, leakage and energy dissipation as well as performance without actual fabrication, thus reducing the design cost.

The design software also can be used to teach undergraduate and graduate students the design of very large scale integrated components and systems with more complexity in less time. The research is applicable in everything from mobile phones to laptop computers to PDAs to automobiles in which battery life or energy cost is critical.

PROJECT DART

To combat the rising incidence of autism and to reach out to rural Texans who lack access to training opportunities in special education, specifically in autism spectrum disorders, the U.S. Department of Education awarded a four-year $800,000 grant to the Department of Special Education to fund Project DART (Distributed Education for Autism Personnel in Rural Texas). The project will allow participants to obtain a master's degree in special education with an emphasis in autism that can be earned entirely through distributed learning methods. The program will complement the on-campus master's degree in special education with a specialization in autism intervention.

Smita Mehta , associate professor of special education and principal investigator, says the project will provide a distributed education option for Texas educators who do not have access to universities in metropolitan areas. The program targets those who are working with students with special needs in a school district in a rural area of Texas. Scholarships will go to 25 top students each year.

The program also will include a supervised field experience component each summer with students with autism in Denton area schools. Kevin Callahan and Bertina Combes, associate professors of special education, are the project's co-directors. Project DART will parallel the activities of UNT's autism spectrum disorders research cluster by focusing on the professional preparation of highly qualified personnel.

REBUILDING GREENSBURG

Rendering by BNIM Architects, Kansas City

Jack Rozdilsky is conducting a long-term study of the recovery of Greensburg, Kan., which is rebuilding as a "green" town after being devastated by a tornado in 2007. Greensburg's Business Incubator Building, in the rendering above, will be built to LEED platinum certification and house 10 to 12 businesses.

Devastated by a tornado in 2007, Greensburg, Kan., is rebuilding as a "green" town — and **Jack Rozdilsky** , assistant professor of public administration, has made the town's recovery the subject of a long-term study. Rozdilsky visited the town with students from the doctoral degree program in public administration to observe field conditions and interview city government officials and others about the town's plans.

Greensburg's city council passed a resolution for all city buildings to be rebuilt to platinum standards set by the Leadership in Energy and Environmental Design program. While LEED buildings cost about 5 percent more to build than conventional buildings, the buildings can save 30 to 50 percent on energy bills, recouping building costs in one to two years.

Rozdilsky says Greensburg's actions in disaster recovery are establishing a model for other cities to consider, since the town decided to go beyond a "business as usual" disaster recovery and incorporate sustainable development into its reconstruction.

Greensburg was the subject of a 13-part series, *The Greensburg Project*, that aired in summer 2008 on the cable channel Discovery Planet Green. Rozdilsky continues to observe and analyze the green redevelopment efforts. His study will be useful to emergency managers and public officials in coping with complex issues of disaster recovery.

FORGIVENESS AND HIV

Teaching forgiveness skills to men and women infected with HIV and helping them to let go of grudges against others and society is the focus of Project Forgive, a pilot study from UNT's **Center for Psychosocial Health**. The study is part of the center's focus on psychosocial issues associated with HIV/AIDS. It was conceptualized from previous research at the center that identified a significant relationship between specific forms of stress (HIV-related stigma) and coping strategies (forgiveness).

Mark Vosvick, associate professor of psychology and director of the center, says the random clinical trial targets depression, stress, quality of life and risky behaviors in HIV-positive adults and teaches cognitive behavioral forgiveness skills. As a result of this study, the HIV population, whose immune systems are compromised, will have access to a new strategy for coping with stress from stigma associated with HIV. By reducing that stress, HIV-positive people may be able to better manage depression and improve medication adherence. Depression and not taking medications as prescribed are two factors that contribute to the progression from HIV to AIDS. To effectively slow the progression to full-blown AIDS, medication adherence must reach levels of at least 95 percent.

In addition to publishing in the *Annals of Behavioral Medicine* in 2007 and 2008, Vosvick presented the study last year at the American Psychological Association convention, the American Public Health Association and the Society of Behavioral Medicine annual meetings.

ANIMAL BEHAVIOR ANALYSIS

Photos courtesy of Jesus Rosales-Ruiz

Students in ORCA, UNT's unique Organization for Reinforcement Contingencies with Animals, conduct research in animal behavior and training. Their studies of the self-injurious behavior of an olive baboon and the trailer loading behavior of horses are two of only three nonhuman applications published by the *Journal of Applied Behavior Analysis* in its 40-year history.

Shaping friendly behavior in dogs, taming feral cats and halter training llamas are among the research projects of UNT's unique **Organization for Reinforcement Contingencies with Animals**. Founded by students in the Department of Behavior Analysis, ORCA also has included students majoring in sociology, social work, psychology and biology.

In addition to data collection and training, the students design teaching procedures and present and publish results of their projects, which are relevant to the care and welfare of animals at zoos, shelters, farms and homes. Recently, a project in which the self-injurious behavior of an olive baboon was assessed and treated was accepted for publication in the *Journal of Applied Behavior Analysis*. The article will be only the third nonhuman application published in the 40-year history of the journal. ORCA's study on the trailer loading behavior of horses was the second, published in 2001. Jesus Rosales-Ruiz, associate professor of behavior analysis, is the group's faculty supervisor.

PLANNING FOR DISASTERS

Natural disasters, hazardous material spills, transportation crises, terrorism — Texas faces many different types of disaster threats. For help in drafting a behavioral health response plan as part of the state's emergency operations plan, the Texas Department of State Health Services turned to the Department of Public Administration.

James Kendra , associate professor and coordinator of the emergency administration and planning program, says scholars and officials increasingly recognize the behavioral health needs of people who have experienced stressful situations. However, organizing diverse providers from public, private and nonprofit organizations remains a challenge. With a $220,000 contract from the Texas Department of State Health Services, Kendra and Simon Andrew, assistant professor of public administration, and graduate students worked closely with state personnel and conducted meetings across Texas to gather insights from those closest to the work in different agencies.

Based on these meetings and in-depth interviews, the team drafted a plan and recommendations to the state to allow behavioral health providers to capitalize on their local knowledge while still aligning their efforts with state-level operations. Results from this project included specifying how organizations will interact during disaster and providing guidance for local agencies in their own behavioral health planning.

DEPARTMENTS

End Note

A growing research agenda