

## VP Chen: Innovation, Responsibility, Leadership

NTU Develops Nanosurgery for Liver Cancer Patients

Law Students Provide Free Legal Service

NTU Establishes Closer Ties with Kyoto U

**Special Report**  
Interdisciplinary Projects



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## NTU AT A GLANCE

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## Vice President's Statement

I recently attended a university presidents conference in Chicago organized by Northwestern University, the University of Chicago and the University of Illinois. These three research universities all stressed the importance of universities in driving knowledge and innovation and influencing society. As a pilot of Taiwanese society, NTU upholds the transmission and innovation of knowledge as guiding principles in its march to the top.

Facing this highly-competitive era of rapid societal transformations, NTU bears a responsibility to cultivate outstanding leaders. When students enter the workplace, they must demonstrate not simply professional knowledge, but also the ability to express themselves, carry out tasks and work as part of a team. We have recently introduced creative integrated courses and the concept of flipped classrooms so as to enhance classroom interaction, promote greater interest in learning and achieve better learning outcomes.

Recently, the Clinical Center of Neuroscience and Behavior, Graduate Institute of Brain and Mind Sciences, and Neurobiology and Cognitive Science Center held their bimonthly conference for the Taida Integrated Brain and Mind Project. So far, the project's two meetings have attracted an enthusiastic response, with dozens of psychologists and neurologists coming together to share their ideas.

Interdisciplinary conferences are a good start. They serve as catalysts for exchanges across fields and spur innovations that transcend existing knowledge. In the future, NTU will also aggressively expand its cooperation with international research partners. Current examples of success in this direction include the Intel-NTU Connected Context Computing Center and the International Center of Excellence in Intelligent Robotics and Automation Research, which NTU established with the French National Centre for Scientific Research.

Innovation comes by crossing boundaries. Probing the unknown through interdisciplinary dialogue creates innovative topics and opportunities for cooperation. I look forward to NTU developing ever more interdisciplinary breakthroughs in emerging and potential fields of research.

*Liang-Gee Chen* NTU Vice President,  
Liang-Gee Chen

# FOUNDATION SIGNS AGREEMENT TO PROMOTE BIOMEDICAL INDUSTRY

The Yonglin Healthcare Foundation held a press conference at NTU on January 16 to mark the signing of an agreement with the university that will provide a major boost to the nation's biomedical industry. Under the theme "industry-academia cooperation, global recruitment," the foundation announced a massive donation project to establish a biomedical engineering center and cancer treatment and research hospital. Below are excerpts of speeches delivered by NTU President Pan-Chyr Yang and Terry Gou, founder of Yonglin Foundation and chairperson of Hon Hai Precision Industry Co.

President Yang: This cancer treatment hospital is planned to be the finest hospital in the ethnic Chinese region, and its mission will be to solve the most important cancer problems facing East Asia and the ethnic Chinese region in both research and state of the art treatment. NTU and the Yonglin Foundation intend to ramp up collaboration once the construction of the Biomedical Engineering Building is completed. We will use the chair professor positions created by Yonglin as part of a flexible recruitment policy to bring leading biomedical professionals to the center from around the globe and promote the development of biotechnology in Taiwan as a whole. I hope to use healthcare engineering and the development of the healthcare industry to improve the health of



Taiwan's citizens and develop new technologies that improve their quality of life. This will be a major direction for academia-industry cooperation at NTU in the future.

Chairperson Gou: Each time Lunar New Year rolls around and I am together with family, I recall the family members who have left my side due to cancer. My heart fills with an inability to let go coupled with an immense desire to build a cancer center that would lead the ethnic Chinese region and rank among the world's finest. The soon-to-be-completed Yonglin Biomedical Engineering Center will become an important global biomedical engineering incubation center, serving as a development platform for interdisciplinary academia-industry cooperation covering cell therapy, radiation medicine, smart hospitals, medical electronics, preventive medicine, biomarkers, biomedical engineering research and development, opto-mechatronic materials and future medicine. We have also established the Yonglin Chair Professorships and Yonglin Scholars programs. By recruiting leading professionals from the global medical community to conduct cutting-edge research, these programs will broaden the scope and expertise of NTU and its cancer center teams to encompass the whole world of healthcare and prevention.

The Tai Cheng Stem Cell Center commenced operations in March 2011 and has since saved the lives of nearly 300 cancer patients. The Yonglin Biomedical Engineering Building will officially open in March. Along with the NTU team we have continued to make adjustments and acquire world-class state of the art techniques and equipment. Furthermore, we intend to recruit at least five research scholars at the level of Nobel laureate as well as hundreds of research personnel who have posted important achievements in their fields.

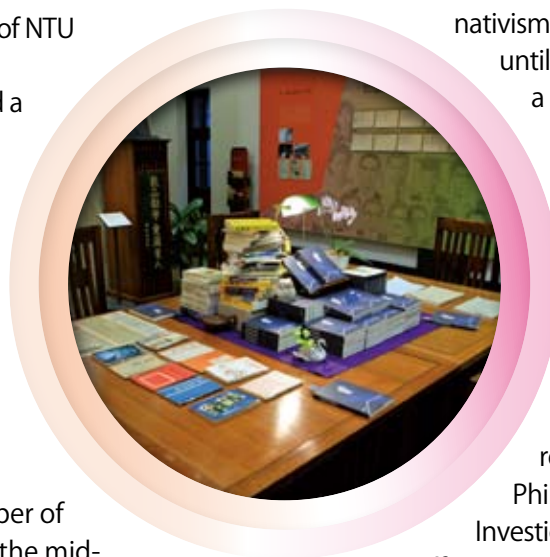


## Exhibit Recalls Politically-motivated Dismissal of Philosophy Professors

The NTU Library and Gallery of NTU History, with the support of the Department of Philosophy, held a special exhibition recalling the NTU Philosophy Department Incident from December 30 to February 27. The exhibition was organized in coordination with last year's republication of the NTU Philosophy Department Incident Investigation Report, which details the politically-motivated dismissal of a number of NTU Philosophy professors in the mid-1970s.

On the exhibition's opening day, a tea reception was held to reflect on the causes and course of events behind the incident as well as observe how the Philosophy Department has stepped out of the shadow of the scandal and moved forward over the 40 years since it occurred. Speakers and guests taking part in the reception included members of the investigation task force as well as four of the professors who suffered due to the inappropriate actions of the university.

The NTU Philosophy Department Incident erupted with the Professional Students Case at a symposium on



nationalism in December 1972 and persisted until June 1975. The incident involved a series of scandals within the Department of Philosophy that resulted in the dismissal of numerous professors, and remains an unfortunate case of political influence interfering with academic autonomy in the history of NTU.

The university approved a resolution establishing the NTU Philosophy Department Incident Investigation Task Force at a university affairs meeting in October 1993, and ultimately released the NTU Philosophy Department Incident Investigation Report in May 1995. In 2013, under the recommendation of NTU Vice President for Administrative Affairs Yung-mau Chao and with the consent of former NTU President Si-Chen Lee, the Gallery of NTU History reedited and republished the investigation report. The republication of the report heightens awareness among NTU colleagues and students as well as the public at large of this regrettable incident in the history of NTU and ensures this important document is no longer simply lying on a library shelf.

## 40th Anniversary of *Family Catastrophe*, NTU Press presents the *Reading Wen-Hsing Wang Series*

Last year marked the 40th anniversary of *Family Catastrophe*, the literary masterpiece of professor Wen-Hsing Wang. To commemorate this anniversary, NTU Press published the *Reading Wen-Hsing Wang Series* late last year. It is a grand collection of research on Wen-Hsing Wang in the Mandarin literary world of the past five decades, providing the best path to appreciate the mind and work of this literary master.



Prof. Wen-Hsing Wang is a novelist of finely crafted language who has devoted his life to reading and writing. He is a master of portraying the characters' spiritual thinking, and his works are filled with deep thinking and refined, unique language. Prof. Wang received the National Award for Arts, and his works *Family Catastrophe* and *Backs Against the Sea* have become classics in Taiwan's literary history.

# Symposium Promotes Interdisciplinary Cooperation on Research

The First Symposium for the Promotion of Interdisciplinary Cooperation Among NTU Research Centers took place on January 5. Since their establishment, NTU's university-level research centers have worked to promote cooperation between industry, government and academia as well as boost the university's international competitiveness in academics.

The January symposium was convened by NTU Vice President for Academic Affairs Liang-Gee Chen and organized by the Center for Biotechnology. The purpose of this first meeting was to bring together all of the directors of the university-level research centers to explore possibilities for interdisciplinary cooperation. The symposium was a great success, drawing 65 research center directors and members who work in a diverse range of fields, including basic sciences, electrical engineering and computer science, life science, agriculture and biological technology, and humanities and social sciences.

Vice President Chen spoke during the symposium's opening ceremony, expressing his high expectations for the research centers. Chen also served as moderator of the symposium's first forum, which addressed how the research centers could promote excellence at NTU. He proposed holding academic exchange meetings between the university's research centers, colleges, departments and graduate institutes each season in order to attract interaction with interdisciplinary research centers.



Presenting the System-on-Chip Center as an example, Vice President Chen pointed out that the center is confronting the truly challenging scientific issues of that field and has garnered broad affirmation from industry and international journals through its pursuit of a diverse range of original research. Declaring "Vision brings support," he further affirmed that, even when faced with insufficient resources, investigators who produce original research can still lead Taiwan to prominence on the global stage and achieve collaboration with international interdisciplinary research centers.

Among other speakers, Dean of the College of Management Andy Ruey-Shan Guo stressed that innovation, design-oriented thinking, and interdisciplinary coordination and cooperation remain crucial to the creation of a successful business model. Dean of the Office of Research and Development Fang-Jen Lee

further noted that the university-level research centers should play a coordinating role in the integration of colleges, departments and graduate institutes. Dean Lee called on the centers to take advantage of research groups that desire interaction in order to accumulate teamwork and interdisciplinary



experience and to take up a leadership role domestically in Taiwan as well project influence in the international research community.

The symposium comprised three forums that addressed respectively the issues of building platforms for research cooperation, innovative technologies in emerging lifestyles and new unions in life science. The directors of eleven research centers attended the symposium to share their centers' missions and major accomplishments. Chairperson Wu Liang-hsiang of Yonglin Biotech Corp., who was invited as a special guest, discussed his century-old company's successful business model, which relied on an original entrepreneurial vision and the integration of different fields and business units.

## NTU-Kyoto University Symposium Sets Milestone in Exchanges



Participants smile for a group photo following the opening of the NTU-Kyoto University Symposium 2013

The two-day National Taiwan University-Kyoto University Symposium 2013, the first meeting of its scale between NTU and Kyoto University, was held at NTU on December 19. Building on the foundation of nearly ten years of close partnership between the two institutions, the milestone event, attended by nearly 300 scholars, set the stage for future cooperation, with NTU President Pan-Chyr Yang promising to visit Kyoto next September.

During the intensive symposium, Kyoto University President Hiroshi Matsumoto, Vice-President Kiyoshi Yoshikawa, and 90 other KU scholars engaged in exchanges with their NTU counterparts. The participants from both universities came from diverse backgrounds, including agriculture, life science, medicine, chemistry and material science, science and technology, humanities, social sciences, university museums, and industrial-academic cooperation.

The symposium commenced with Vice-President Yoshikawa and NTU Dean of International Affairs Luisa Shu-Ying Chang presenting overviews of their respective institutions, and continued on to the two presidents' plenary speeches. President Matsumoto discussed "The Role of Universities in Promoting Innovation," while President Yang elaborated on "Shaping NTU to Meet Global Challenges." The presidents' speeches, while pointing out key challenges faced by higher education in current times, also laid the foundation for the symposium.

The opening ceremony was followed by nine parallel sessions, where bilateral academic exchanges enhanced the scholars' recent research and opened up possibilities for future joint projects. Poster sessions in which students from both universities showcased their research findings, also ran throughout the symposium. Besides addressing academic research, this symposium provided opportunities for sharing experiences concerning university museums and industry-university cooperation.

## President Yang Attends East Asian Research University Conference

The AEARU-LERU Presidents Meeting and the 19th Annual Conference of the Association of East Asian Research Universities were held at the Tsing Hua University on December 7-8. President Pan-Chyr Yang was invited to deliver a speech on the "Cutting Edge Research at NTU." In addition to sharing NTU's innovative research and experience in cross-national collaboration, President Yang elaborated



University officials give a thumbs up at the AEARU-LERU Presidents' Forum.

on the cultivation of the students' sense of "social responsibility," the promotion of global Mandarin online courses, and innovative business plans.

The Association of East Asian Research Universities (AEARU) is a cross-national research organization in the East Asia region, established in 1996 with the mission to promote exchanges among East Asia's top research universities. Currently it includes 17 research universities in East Asia (China, Korea, Hong Kong, Japan, and Taiwan).

This year, AEARU held its first joint conference with the League of European Research Universities (LERU). At the conference, President Pan-Chyr Yang also presented Coursera alliance, which NTU joined at the beginning of this year. The alliance includes free online MOOC (Massive Open Online Courses) provided by 75 well-known schools around the world, including Stanford and Yale in the US, Munich and Heidelberg in Germany, Barcelona in Spain, London Imperial and London in the UK, Lund in Sweden, etc. The courses to be offered by NTU include such student favorites as "Probability," "Ancient Chinese Historical Figures-Qin Shihuang," and traditional Chinese literature, "The Dream of the Red Chamber" and "Records of the Grand Historian," thus promoting traditional Chinese culture to the world.

## “TOUCH SENSE” SCREEN WINS TOP PRIZE AT MOBILEHEROES COMPETITION

The “TouchSense” touch screen technology developed by faculty members of NTU’s Department of Computer Science and Information Engineering and Graduate Institute of Networking and Multimedia outperformed the innovations of one thousand other competitors to take the top prize for the Implementation Group and to win the HTC Business Award and the Qualcomm Business Award at the 12th “Mobileheroes - Smart Mobile Device User Experience Design Competition,” held by the Industrial Development Bureau of Taiwan’s Ministry of Economic Affairs.

The research team was led by Professor Yen-Yang Chen (Mobile HCI Research Lab) and Professor Yi-Ping Hung (Image and Vision Lab) of NTU’s Department of Computer Science and Information Engineering. The innovative idea of “TouchSense” comes from the recent rapid development of wearable devices, such as smart watches and Google Glasses. Smart watches are challenging to develop; since their operation interface is relatively small, the usual input methods will not be suitable in that operation environment.

“TouchSense” uses a fresh idea: users can learn to use different areas of their finger pads to touch the screen to produce different input results. By trial and error, the users can find out how to trigger the interactive operations they want. Inertial motion units are used to determine the contact position of the finger on the touch screen for keying in various commands and improving user skills at managing small wearable device touch screen interface operations. The team’s research results will also be published in the ACM CHI Conference 2014 proceedings under the title, “TouchSense: Expanding Touchscreen Vocabulary Using Different Areas of User Finger Pads.”

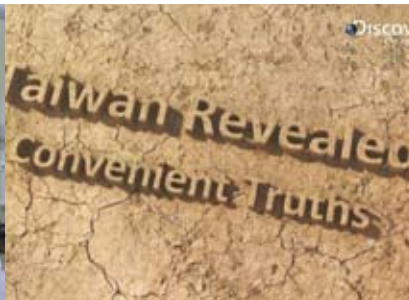
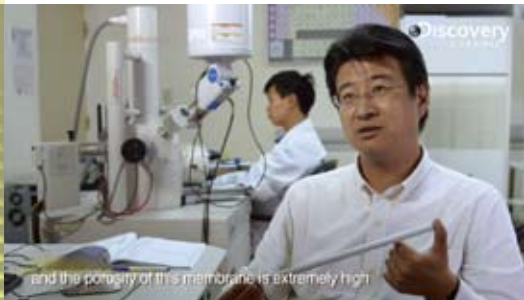
“Memoir Monopoly” was created through the fruitful collaboration of NTU’s Department of Computer Science and Information Engineering and Department of Industrial and Communication Design of National Taiwan University of Science and Technology, for which they won the Best Design Award in the User Experience Design Group. The research team was led by Professors Yen-Yang Chen and Hsuan-Hui Tang.

With the onset of an aging society, more and more seniors suffer from dementia. Locally produced rehabilitation teaching aids for seniors with dementia in Taiwan are sorely lacking. At the same time, imported foreign teaching aids and infant teaching aids are not suitable for local people. A few printed teaching aids developed by nursing institutes also do not meet their needs very well.

Based on the *Monopoly* board games now published by nursing institutions, cross-disciplinary collaborations have been conducted between occupational therapists and information engineering teams to design the Memoir Monopoly App. The *Monopoly* game format is provided to convert users’ personal pictures and preferences into various rehab activities, and create unique Monopoly maps for each rehab group, which allows professional occupational therapists to adjust the difficulty levels of the game. Rehab activities that are closer to the personal experiences of the seniors can stir their interest and help them to recall the past. The game provides film appreciation, classic songs, and interactive games to stimulate the seniors’ memories and is expected to improve rehab effectiveness.



## DISCOVERY CHANNEL FEATURES CHEMICAL ENGINEER'S GEOMIMETIC PROCESS



Prof. Allan Kuo-Lun Tung, a new faculty member at the Department of Chemical Engineering, has been featured in a Discovery Channel program because of a novel geomimetic membrane fabrication process he developed that can be used to produce high-performance inorganic porous membranes.

Prof. Tung took inspiration for his geomimetic process from volcanic rock and natural zeolite formations. Discovery Channel introduced Prof. Tung and his novel process on the program "Taiwan Revealed—

Convenient Truths," which premiered on December 30 in Taiwan and was scheduled to be broadcasted in 155 countries thereafter. This novel technique was developed by Prof. Tung when he was serving as director of the Center of Excellence on Membrane Technology in Chung Yuan Christian University from 2009 to 2012 under the support of the Ministry of Education, National Science Council and Chung Yuan Christian University.

Prof. Tung learned his lesson from nature by investigating the formation of natural zeolites, which form where

volcanic rocks and ash layers react with alkaline ground water. Prof. Tung first applied this concept to the thermal plasma spraying process, successfully producing highly-effective filtering structures with both macro and micro pores. He calls his new product a "geomimetic porous inorganic membrane."

Tung's geomimetic approach possesses the advantages of being energy-efficient, time-saving, cost-effective and eco-friendly. The fabricated geomimetic porous inorganic membrane can be used for separation and purification applications in acid and alkali streams or solvents. The membrane also shows potential for use in chemical process intensification to recover process resources and fluids, which help achieve sustainable development goals.

## PROFESSOR SHI-MING LIN AND TEAM WIN 10TH NATIONAL INNOVATION AWARD WITH HbA1c TRICORDER

The award ceremony of the 2013 National Innovation Award was held on December 19. Professor Shi-Ming Lin and the research team from the Center for Optoelectronic Biomedicine, College of Medicine, developed HbA1c Tricorder, a kind of innovative personal health detecting instrument. It utilizes the inductance capacitance impedance dynamics model to determine the density of HbA1c in the blood vessels, arteries, and veins. The technology has been productized and has completed CE certification for measuring the density of HbA1c in red blood cells and minimizing the difference between testing results.



This tricorder allows diabetes patients to detect the density of HbA1c in their blood.

The equipment is light, compact, portable, and increases the testing convenience and efficiency. Smart phones are used as control interface to instantly transfer the information to consulting doctors to be quickly recorded and analyzed for speedy diagnosis and personal medical

care. The HbA1c level of normal peoples is between 4% and 6%; if the level in diabetes patients can be kept under 7%, their symptoms and complications can be reduced and even alleviated.

By using the HbA1c Tricorder at home, doctors, and patients can more efficiently evaluate the effect of diet, activity, medication, and adjust insulin prescription and treatments in timely fashion. This innovation assists doctors in helping diabetes patients respond to and control outbreaks of diabetes symptom and complications, thus benefiting people and reducing the expenditure of medical resources.



# Electrical Engineering Students' Robot Wins Basketball Competition

The Ministry of Education and Institute of Electrical and Electronics Engineering supervised the 5th Annual International Robot Competition. Domestic and international college teams from Taiwan, China, Japan, Etc., attended the competition. NTU Electrical



Engineering graduate students formed the iCeIRA team, and their ShootBot won the basketball competition.

The captain of the NTU team, Lin Zhe-yi, a sophomore of the Graduate School of Electrical Engineering, stated that the categories in the competition include: taking the ball, positioning, avoiding obstacles, and passing the ball. The team uses cameras to grasp the situation in front of the robot, laser distance

measuring equipment to measure distance, and fly wheels to adjust the robot's shooting speed and distance.

NTU Robot Team instructor, Professor Ren C. Luo stated that the robot must rely on vision system to find the position of the basketball, and calculate the trajectory of shooting the basketball according to the position of the basket. At the same time, they have to avoid obstacles. During the actual competitions, external factors such as colors and flashes will affect shooting. For this, when designing calculation methods, adaptability must be considered. "We have to do our best to eliminate these disturbing factors," Professor Luo stated, adding that "the application

of the vision server control system that applies in interactions between people and robots is an important core technology for service type smart robots to be used in industry."

Currently, Taiwan's robot industry focuses its research and development efforts on human-robot interaction and the knowledge science of robots. The International Robot Hands On Competition & Symposium provided a precious opportunity for Taiwanese and international competitors to interact and learn from each other. This will further nurture the integrating abilities of young and future technological talent in Taiwan.

## NTU Ranks 4th Among BRICS and Emerging Economies

NTU garnered an impressive fourth-place ranking in the recently-released Times Higher Education BRICS and Emerging Economies Rankings for 2014. The rankings rate the top 100 universities across 17 countries, including the BRICS, Brazil, Russia, India, China and South Africa, as well as Turkey, Colombia, Poland and Thailand.

China's Peking University and Tsinghua University claimed the ranking's top-two spots, while South Africa's University of Cape Town took third place and Bogazici University of Turkey grabbed fifth.

Taiwan has 21 universities in the rankings, while China has 23. Universities in Japan, South Korea, Hong Kong and Singapore were not considered in the rankings.



**BRICS & Emerging Economies Rankings 2014 top 10**

Rank	Institution	Country
1	Peking University	China
2	Tsinghua University	China
3	University of Cape Town	South Africa
4	National Taiwan University	Taiwan
5	Bogazici University	Turkey
6	University of Science and Technology of China	China
7	Istanbul Technical University	Turkey
8	Fudan University	China
9	Middle East Technical University	Turkey
10	Lomonosov Moscow State University	Russian Federation

## NTU and MIT Team Up on Digital Shakespeare Archives



Ⓐ The Taiwan Shakespeare Database is the first digital archive to team up with MIT's Global Shakespeare archive.

**O**n December 20, Peter S. Donaldson, Professor of Literature at Massachusetts Institute of Technology visited NTU to sign a memorandum of collaboration between MIT's Global Shakespeares Video and Performance Archive and NTU's Taiwan Shakespeare Database. MIT is widely recognized as one of the foremost authorities in digital technology and in the intersection of computing and the humanities. The Taiwan Shakespeare Database takes pride in being the first formal collaborator with MIT's well-established repository.

Shakespeare is far and away the most performed playwright in Taiwan, where he appears in the most varied colors. Regrettably, many of these productions remain undocumented and little known outside local circles.

The Taiwan Shakespeare Database is an open-access online archive of Taiwan's Shakespearean productions, with both English and Chinese interfaces. Its mission is to bring Taiwan's Shakespearean theater to the world stage and to supplement the existing record of world Shakespeares. Its launch and link to MIT's Global Shakespeares will markedly enhance the visibility and influence of Taiwan's theater and scholarship.

The database was created by Prof. Beatrice Bi-qi Lei of the Department of Foreign Languages and Literatures. Prof. Lei was facilitated by the technical support of the Research Center for Digital Humanities and sponsorship from the National Science Council and NTU's Aim for the Top University Project.

Aiming to be both comprehensive and in-depth, the database presents the theater works in their historical and cultural context. It offers not only videos of performances but also production background, interviews, publicity materials, designs, photos, news coverage, reviews and essays.



Ⓐ (Left to right) Hsiang Jieh, Peter Donaldson and Beatrice Bi-qi Lei

Records are annotated in English and Chinese, and the performance videos also offer bilingual subtitles.

The database constitutes a useful tool for researchers, teachers and students alike, who can browse through the productions or search for specific data. The database is an ongoing project, and application tools for teaching and research are also being developed.

## NTU and Japan's Tsukuba University to Hold Joint Conference in February



**N**TU and Japan's Tsukuba University will hold a joint conference at the GIS NTU Conference Center on February 21-22. Kyosuke Nagata, President

of Tsukuba University, will lead over fifty professors to visit NTU for two days of academic exchanges, marking the first major joint conference held by the two institutions.

Tsukuba University and NTU are both members of the Association of East Asian Research Universities (AEARU); the core theme of the conference will focus on two main themes: domains "Prescient Education Cooperation

Forum" and "Advanced Science Cooperation Forum," and will include six academic fields (humanities, social science, life science, agriculture, medicine, and global health). The main foci of the conference, the Prescient Education and Advanced Science Cooperation Forums will be held in the afternoon of February 21, and emphasize three main themes: social responsibility of universities, globalized education strategy, and advanced science.

## Vice Presidents Attend Conference on Universities and Urbanization in Chicago

Vice President for Academic Affairs Liang-Gee Chen and Vice President for Financial Affairs and Chief Financial Officer Ming-Je Tang led a nine-person delegation of NTU officials and faculty in attending the international conference Global Urban Challenges: The Role of Research Universities in Chicago in November. Members of the delegation included Dean for International Affairs Luisa Shu-Ying Chang, Dean of the College of Electrical Engineering and Computer Science Sy-Yen Kuo, and Director of the Graduate Institute of Building and Planning Li-Ling Huang. Also, Chia-Pei Chou, who is a distinguished professor of NTU's Department of Civil Engineering as well as the director of the Division of Science and Technology at the Taipei Economic and Cultural Representative Office in Washington, D.C., made a special trip from the United States' capital to join the NTU delegation at the conference.



November 18 to 20, attracting nearly 200 participants from more than 25 academic institutions around the globe. Organized by the Chicago Council on Global Affairs, Northwestern University, University of Chicago and University of Illinois, the conference addressed the



issue of increasing urbanization, discussing ways to combine the research capacities of universities in order to make significant contributions in such areas as urban health, urban education and urban vitality.

During the conference, Associate Dean of the College of Public Health Chang-Chuan Chan served as a panelist for an urban health session, while Prof. Chun-Yen Chang of the Department of Horticulture and Landscape Architecture sat on a panel that discussed urban sustainability.

After the conference, Vice President Chen and Vice President Tang led the delegation to UIUC for a two-day campus tour on

The NTU delegation also made two other stops while in the United States. Prior to the conference, they celebrated NTU's 85th Anniversary with the NTU Alumni Association of Greater Chicago, and, following the conference, they paid an official visit to major NTU partner university the University of Illinois at Urban-Champaign.

The Global Urban Challenges conference took place from



The NTU delegation joins UIUC officials for a group photo.

November 21 and 22, and were warmly welcomed by UIUC Provost and Vice Chancellor for Academic Affairs Ilesanmi Adesida. During the visit, representatives of both universities expressed their high aspirations and deep support for the close partnership the two institutions share as well as forthcoming strategic partnerships.

While on the UIUC campus, the delegation also visited the National Science Foundation-supported National Center for Supercomputing Applications. In addition, NTU delegates working in the fields of landscape and health, urban planning, and smart grids met individually with their UIUC counterparts.

The central purpose of the visit was to hash out specific plans for the establishment of a strategic international partnership. As a first step in further strengthening bilateral relations, the two universities agreed to organize an annual symposium that is held alternately in Taiwan and the US. The first symposium will be hosted by NTU in 2014 under the theme "Smart Cities, Healthy Cities."

## NTU and Kyoto University Museum Sessions Reap Fruits of Closer Ties



Representatives of Kyoto University Museum show off their NTU in My Blood wristbands in support of NTU's hosting of the sessions.

NTU Museums and Kyoto University Museum held a two-day museums conference as part of the historic National Taiwan University-Kyoto University Symposium 2013 on December 19 and 20. The conference included two sessions as well as a signing ceremony for a memorandum of understanding for cooperation between the two museums.

The conference commenced with a signing ceremony in which Dr. Hsueh-Hua Chen, NTU University Librarian and convener of NTU Museums, and Dr. Terufumi Ohno, director of the Kyoto University Museum, met to formally sign the MOU agreement together. The remainder of the day one was dedicated to Session One, titled, "Kaleidoscopic University Museums: Panoramic View/ Microscopic Focus," with three sub-sessions: "Role Orientations of University Museums," "The Academic Value of University Museum Collections," and "Digital Archives and Academic Networks of University Museums." The sub-sessions featured oral presentations by seven prominent NTU and KU professors and senior staff members.



Day two's theme was "Being Part of a University Museum: Multifaceted Interpretations by Students and Staff Members," and 17 young scholars, staff members, and students from NTU and KU gave colorful poster presentations and briefings.

During the past year NTU and KU held three joint symposiums, which brought the two institutions closer and enabled them to benefit each other through direct exchanges. For instance, taking its inspiration from the NTU Museum of Medical Humanities, the Kyoto University Museum will soon open its own museum of medical history. Likewise, NTU Museums has studied the operations of Kyoto University's children's museum to formulate its own plans for the creation of a children's museum at NTU.

Museum officials from NTU and Kyoto University take a break for a photo during the signing ceremony for the MOU.



Moreover, as KU hosted the Association of Pacific Rim Universities' first Research Symposium on University Museums in 2012, NTU Museums, which will host the second APRU museum symposium during May 20-22, has learned from KU's experience to ensure that its preparations for this major international event go smoothly. The theme of this year's APRU museum symposium will be "Reshaping Outreach Services of University Museums through Innovation and Partnership."

The NTU-KU museums sessions came off as a resounding success, drawing nearly 200 participants and providing a diverse offering of 41 poster presentations and 25 oral presentations and briefings. The impressive breadth and depth of the conference marked the culmination of the last year's close cooperation between the two museum systems. This year, they will continue to move forward with the goal of building this friendly and fruitful relationship into a model for international exchanges between university museums.

## NTU HOSPITAL RECEIVES GLOBAL RECOGNITION FOR ACHIEVING NEW MINIMALLY INVASIVE TREATMENT FOR LIVER CANCER

Liver cancer is the most significant malignant disease in Taiwan. For primary liver cell cancer or metastatic cancer, or metastatic tumors of colorectal cancer, the patients are many, and the treatments are not easy.



Irreversible electroporation relies on precise electrical pulses to kill tumors.

They are painful to the numerous patients, and bring sorrow to many families. Although traditional hepatectomy and tumor ablation (also known as electrocoagulation) provide treatment opportunities for patients, they have many limitations.

In 2012, the NTU Hospital Department of Surgery started to develop irreversible electroporation (also known as nanosurgery). It involves using partially high voltage to electrically shock tumors and create nano-sized holes in the cancer cells to kill them. Due to the precision of the pulses of electric current, the electric shock treatment has proven to be effective in killing cancer cells. Doctors can use it in dangerous regions that are not suitable for electrocoagulation.



Irreversible electroporation relies on precise electrical pulses to kill tumors.

As of November 2013, NTU Hospital completed the clinical tests for safety and treatment effects approved by the Ministry of Health and Welfare. No safety concerns for irreversible electroporation were detected, and the treatment effect proved to be positive. Some patients could leave the hospital just one day after receiving direct external transdermal treatment. Most of the patients still go to clinics for follow-ups. Thus far, there have been no cases of relapse, and nearby organs are not harmed by the treatment. Currently, the NTU Hospital has started conducting the next phase of clinical tests and research, and hopes are to use it in regular clinical treatments at the earliest possible date.

The irreversible electroporation treatment is more difficult than traditional electrocoagulation to undertake, and it requires anesthesia, imaging, and the cooperation of experts from many departments. The NTU tumor intervention team has accumulated a lot of precious experience from the treatment of nearly 40 patients with all kinds of liver, gallbladder, and pancreatic cancers. For its work, the team

has received international recognition. Currently, there are only 3 clinical training facilities in the world that are officially certified: University of Louisville Hospital in the United States, Imperial College London in the United Kingdom, and National Taiwan University Hospital in Taiwan.

NTU Hospital is the only such training facility in the Far East and has become the primary training center of choice for doctors in East Asia. In recent years, NTU Hospital has trained over 10 groups of doctors from Japan, Australia, China, and Hong Kong. Doctors who train here have a great impression of the seamless operation of the NTU Hospital team, as well as their excellent facilities, understanding of nanosurgery, skills, and innovative surgical abilities. Although NTU completed its clinical trials in November 2013, it still emphasizes the spirit of international team work. The research center team members continue to improve their skills and assist other countries and regions in collectively making new breakthroughs in cancer treatment.



Prof. Homer H. Chen

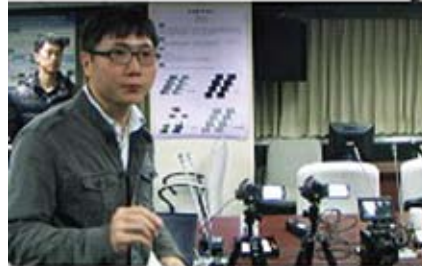
# TEAM IMPROVES AUTO-FOCUS AND PROJECTION TECHNOLOGIES FOR DIGITAL CAMERAS

The popularity of smartphones has changed the way modern people live. The mobile phone industry cannot overlook any aspect, from photography to display in maintaining their image of consistent high quality.

Professor Homer H. Chen's research team has improved photographic image display functions. Their research can be divided into two major areas and related applications: "casual photography" and "on demand projection."

### Casual photography

Cameras and camcorders are omnipresent in modern life. The speed and functions of auto focus systems are important to ensure the production of clear images smoothly and at any time. The main technological problem is that people cannot simultaneously attend to noise immunity and the speed of auto focus. In order to solve this problem, Professor Chen's team has upgraded noise immunity, allowing the lens to be effectively locked on to the position of focus. This reduces instances of the lens moving back and forth, in turn improving the quality of image retrieval. These developments have been integrated into surveillance cameras, movie recorders, smartphones, and general camcorders.



### On demand projection

With the continued miniaturization of modern projectors, a pure white screen is not easily obtained today. To this end, Professor Chen's research team has integrated psychological research into optical perception with electrical engineering research into signal processing technology, using the camera to capture the characteristics of the projection surface and provide color compensation.

This technological breakthrough can "bleach the screens," producing the effect of a white screen. Users can project images onto walls, doors, or desks at will. Not only do the micro projectors benefit from this, this technology is also applicable to large projectors, which is most certainly great news for the projector industry.

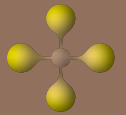
The research team is simultaneously attempting to improve the color quality of LCD screens. Backlight plates consume half of the electricity used by this kind of electronic device. Thus, the most effective way to conserve electricity is to lower the strength of backlight of LCD



screens. Lowering the strength of backlight usually makes the images worse. However, the low backlight color reinforcement technology developed by Dr. Chen's research team can reduce the influence of the strength of backlight on image quality. This allows the user to maintain the best color experience while conserving electricity.

The strength of this technology lies in the fact that it incorporates not only the physical but also human perceptual experience to maintain color consistency. This technology can be applied in many different areas; not only can it prolong standby time, it can also improve image quality on all kinds of LCD display devices.

The research team has published three papers in international journals and eight seminar papers (one of which has garnered an award) and has also obtained two American patents, two Taiwanese patents, and one PRC patent.



# Legal Services Volunteers Give Back to Society

When people think of legal problems they more often than not conjure up an image of cold pragmatism and stern pride. However, the NTU Legal Services Society at the College of Law has striven for 35 years to change people's grim view of law and the legal profession.

The society was founded in 1979 by Prof. Lian-Gong Chiou, with assistance from Prof. Shu-Huan Shyuu and Prof. Ming-Chiang Lin. The mission of NTU Legal Services Society is to make Taiwan a nation that truly honors the rule of law, and it remains dedicated to its founding spirit of service and to resolving the pressing legal problems of the people. Students who intern with the society not only gain valuable practical experience that can help them in their careers but are blessed with the opportunity to give back to society the fruits of what they learned at NTU.

"Don't allow your rights to fall asleep" represents the concept on which the Legal Services Society was established. Besides awakening people to a consciousness of the law, the society serves as the perfect channel for people who are unable to cover high legal fees or who don't know where to turn for legal advice.

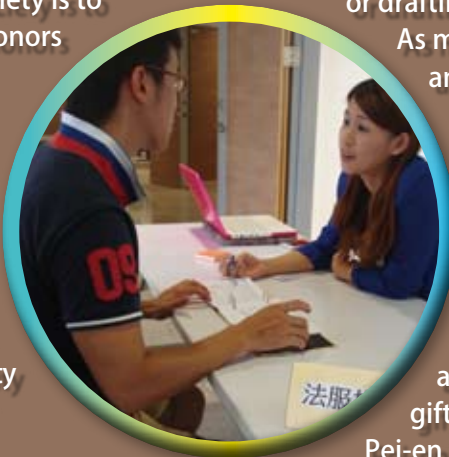
Every Saturday afternoon at least 30 to 40 people meet with the society's consultants on a first come first serve basis. The society has handled tens of thousands of cases since its founding, helping people from every city and county in Taiwan as well as foreign



nationals. Most cases involve civil or administrative law, with real estate and inheritance litigation accounting for the majority of the civil cases. Moreover, the society also cooperates with the Legal Aid Foundation of Taiwan, which dispatches two lawyers to provide consultation services each week.

For the most part, the society's volunteer lawyers provide only face-to-face consultations, while adhering to a code of not participating in or drafting legal cases or going to court.

As many of the graduate students and alumni who volunteer also work as practicing attorneys, these rules ensure there are no opportunities for them to profit financially through the society. The volunteers are also prohibited from discussing cases in private with the people they advise or from accepting valuable gifts. The society's Secretary-General Pei-en Huang recalls that one person once brought 20 cups of coffee to the society out of gratitude, but the society volunteers politely declined the gesture out of their sense of pure service.



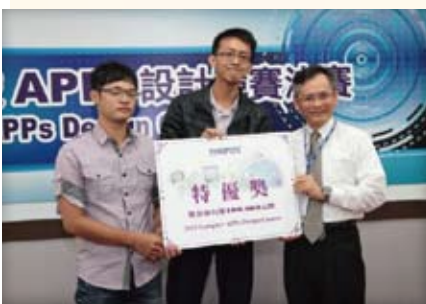
In addition to providing legal consultations, the volunteers also learn to handle unexpected situations with an open ear and patient communication. One volunteer student once encountered a person who was unwilling to accept a recommendation and rushed into a classroom to seek the professor's opinion. Even some people who connive to sue others just to make money yet are not licensed to practice law have appeared at the society in search of legal advice.

## NTU to Allow Students to Test Out of Basic Subjects for Credit

Guided by Professor Chieh-Hung Jiang, graduate students Hsin-Yen Ho and Shuo-Ren Lin of the Graduate Institute of Electrical Engineering won the championship at the Synopsys APPs Design Contest. IC design continuously grows more complex, creating numerous related problems in which circuit area and timing analysis are crucial elements.

Compared to Acyclic Circuits, Cyclic Circuits can have a smaller circuit area, yet they are not supported by current IC design procedures. The main reason is that their legit functions cannot be verified promptly. The team proposed using Boolean Satisfiability to quickly resolve this problem, enabling circuits that contain millions of logic gates to complete analysis within 20 seconds.

In terms of timing analysis, the computing of Timing Closure and Timing Sign-Off in IC design procedure is fairly time-consuming. The teams' entry in the competition utilizes Functional Timing Analysis to provide faster and more accurate delay computation; the analysis is further applied to Cyclic Circuits. Designers can find the path that causes Timing Violations and improve it.



## A Seamless Learning Transition between High School and College



College freshmen with excellent grades in basic subjects can earn credits directly by taking certification tests and place out of the related college course. The students can use the time saved by this certification mechanism to take a more advanced elective or general education courses. They can thus have more freedom in planning which specialized courses, cross-disciplinary courses to take or even which double major to pursue in realizing the ideal of diversified learning.

During the opening ceremony of the 2013 academic year, NTU president Yang Pan-Chyr declared that when college freshmen course schedules are filled up with compulsory courses, their learning becomes lifeless and rigid. Thus, in order to allow talented students who have sufficient basic knowledge to avoid repeating familiar materials and give them space for flexibly diversify their course arrangement, NTU will implement certification tests in basic subjects starting in the 2014 academic year. Students who pass these certification tests will be able to earn college credits directly from them and thus better chart their learning map for their four years at college. To this end, certification tests were successfully tried out in General Physics and General Chemistry in the second semester of the 2013 academic year. A mechanism has been established to ensure that the certification process is valid.

The first basic courses that are open for certification include: Freshman English, Calculus, General Physics, General Chemistry, General Biology, and Economic Principles and Internship. The aim is to gradually include basic courses in other fields. Currently, the six certification courses represent a total of 36 credits. This could have a huge impact on students' course planning and overall higher educational development in the future.

Basic subject certification testing will not be limited to NTU students but will be offered in various partner schools also served by the Second Northern Taiwan Teaching Resource Center. Students' certified credits will be recognized any school within the district. If possible, national credit certification will be promoted, and linked to the certification systems of universities in Taiwan and overseas to optimize the benefits of this certification mechanism.



## “Written Life Record, Recording School History: NTU Students’ 365 Day Diary” Report



Since opening in 2005, the Gallery of NTU History has received numerous inquiries from movie and television directors and screenwriters concerning the clothing styles and extracurricular activities of previous generations of NTU students. These are truly difficult questions to answer. The official school historical records don't contain anything about the "life stories" of past generations of NTU students, therefore the Gallery could only slowly and painstakingly piece together past students' lives from collections of old photographs, cultural objects, interviews with alumni, and fragments of writing in old periodicals and books. This problem led to an idea: why not, for future generations, collect a record of current students' lives?

Thus, the Gallery initiated the "Written Life Record, Recording School History" activity. From June 1st 2012 until May 31st 2013, the Gallery asked students to keep a diary for a full year. By recording NTU students' daily activities and bits

and thinking, we can see the true face of today's campus life. In addition, future NTU students can rely on these diaries to understand the good times of life and learning of NTU students in the early 21st century.

The collection received over 300 diary manuscripts. Besides binding them together to produce the only handbound book on display in the museum, in order to reach even more readers, the Gallery reproduced the diary as an e-book and posted it on a website where it can be freely browsed. Additionally, in step with the handmade book and e-book's release date (14/10/2013), the Gallery simultaneously held a special exhibition to lead everybody through the NTU students' diary and moving writings.

The experience of reading straight the book through from the first diary to the last can move a person to tears. The NTU students worked hard to leave genuine records of their lives for the school's history. "School history lasts forever, every day passes on forever;" pages of youth that belong to NTU students and really happened on campus will always be preserved in NTU's history.



A student's handwritten manuscript sits on display.

## Exhibition Showcases Entrepreneurship Program's Creativity



The Creativity and Entrepreneurship Program put on a joint exhibition showcasing the creative accomplishments of students from four of the program's courses at NTU's Boli Art Gallery on January 7. The exhibition featured works completed during the fall semester by students taking the program's "Service Design," "Art and Creation," "Creative Thinking," and "User Experience" courses. These courses enabled students to express their youthful creativity through a practical, hands-on production process, which resulted in some brilliant and innovative achievements.

Following the opening ceremony, guests viewed an exhibition of paintings created by more than 60 students in the "Art and Creation" course. While taking in the colorful display of artwork, the course's instructor Prof. Hung-Ta Hsieh said he hopes the students had learned to appreciate the aesthetics of art, enjoyed the joy of creation, and come to understand that the process is more important than the result.

Next up was the exhibition of the accomplishments of the "Service Design" students. Taking the needs of customers as its starting point, service design relies on methodologies that use

creativity, human-oriented design, and the concept of customer participation to design services and methods for providing services. The exhibition's advisor, Prof. Hung-Chih Lai, emphasized that in the process of service design one must learn to employ creative thinking as well as attempt to bring elements from different fields into play, and then follow up with the hands-on dirty work. Prof. Lai said that only then can one realize the core principles of service design and more precisely convey the value of a service.

The challenge presented to the "Service Design" students was to apply design thinking so as to experience users' aspirations and demands from their points of view and then design an optimal service solution. One group of students designed easy yet fulfilling micro-tours for senior citizens. The students viewed the elderly as being concerned with safety and routine yet still eager to share interesting travel experiences with friends and relatives, and searched for alternatives to tours with extreme changes. The students formulated their mini-tours after meeting with senior citizens and conducting surveys.

The goal of the "User Experience" course was to

allow students to observe an event to determine experiences and situations users might confront and then develop a completely new service model by making improvements or additions where existing service is inadequate. One of the student projects presented in the exhibition was called The Personal Fashion Consultant. The students had observed that some men who don't know how to dress fashionably find it difficult to buy and wear clothes, which leads to lower clothing sales. After interviewing male shoppers and collecting data, the



students designed a relaxing and interesting clothing consulting shopping tour as well as an accompanying business profit model.

# NTU at a Glance



Walking on the third level of the School of Forestry and Resource Conservation building, one finds an inconspicuous room labeled "Herbarium," neat and simple; however, walking into this unassuming hall of history, one soon discovers abundant treasures of Taiwan's agriculture and plant systematics in the soft surroundings. The room holds about 100,000 plant specimens, over 800 holotypes, and Taiwan's earliest herbarium specimen, dated 1792.

This herbarium has a rich collection, and is listed as one of the three grand herbariums of Taiwan. (The other two are the Herbarium of the Taiwan Forestry Research Institute and the Herbarium of the NTU Department of Life Science.) The earliest specimen in the herbarium was collected from the Philippines in 1792 along with other specimens on ships during the Age of Discovery. Chozaburo Tanaka made specimen exchange in order to obtain this specimen for research.



An exhibition counter of the School of Forestry and Resource Conservation Herbarium is included at the "Re-burgeoning of Ancient Seeds" exhibition at the NTU College of Life Science Herbarium. Additionally, there is a special exhibit on Chozaburo Tanaka. Embark an unforgettable historical journey with your friends to witness the preserved pearl of the School of Forestry and Resource Conservation!



# Public Art Brings Vitality to Winter

Very Fun Park: Eye of the Times—A Dialogue with Contemporary Art was an exhibition of public art that occupied the NTU campus from November 26 to January 15. Organized by the NTU Center for the Arts and Fubon Art Foundation, the exhibition placed colorful and thought-provoking works of public art at different locations around campus, giving an injection of vitality and color to the campus over the course of the winter.

Over the seven weeks of the exhibition, nearly 10,000 visitors ended up stopping by the campus to appreciate the display of public art. The art center put on the exhibition out of hopes it would not simply beautify the campus, but would heighten students' awareness and sensitivity to space and environment.

The success of Very Fun Park has the NTU Center for the Arts and Fubon Art Foundation looking forward to opportunities for future cooperation.



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