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NTU HIGHLIGHTS

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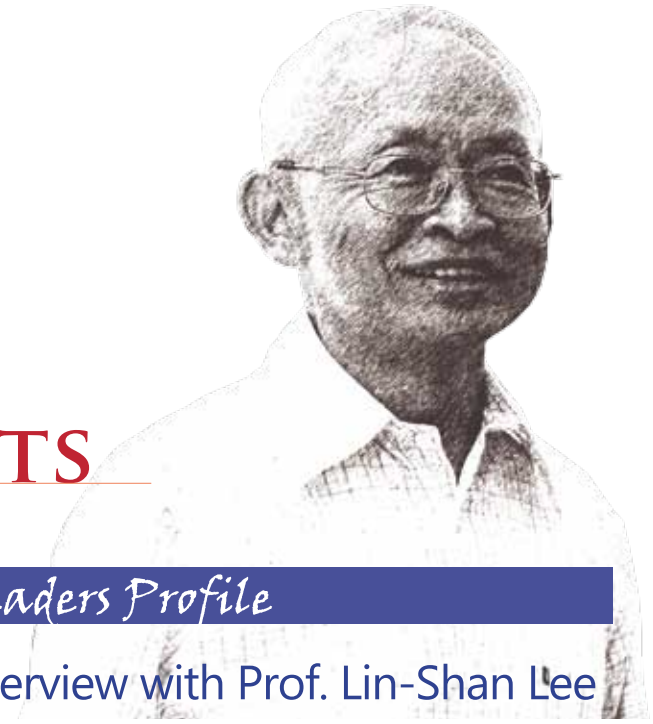
NTU Promotes Climate Change Degree Plans

NTU, Foxconn Sponsor Cancer Research

Soothing Effect: Children's Picture Books in Library

AEARU Meeting in S. Korea

Lin-Shan Lee: Making Computer Understand Chinese



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Tsung-Fu Chen

VICE PRESIDENT FOR STUDENT AFFAIRS

NTU students recently cast their ballots in the 19th election for president of the NTU Student Association. Twelve candidates campaigned for the presidency this year, setting a new record for the association.

Witnessing students demonstrate the courage required to get involved in student self governance, Vice President for Student Affairs Tsung-Fu Chen wishes to express his support. Vice President Chen urges students to strive not only to advance themselves academically but to pursue self development in all areas of their lives. Noting that contemporary society prioritizes practical ability over academic degrees, he stresses that students ought to take the initiative to cultivate vital workplace skills, such as communication and planning skills, by participating in extracurricular activities. The vice president further recommends that students sign up for the NTU Internship Program at the Career Center to develop their occupational skills, get on track with society, and gain an understanding of the types of professionals that are in demand in the job market of today.

Vice President Chen strongly encourages students to take part in public affairs in the belief that, not only can the university make improvements by heeding student opinion, but students can develop their life skills through such self governance activities. Participation in the NTU Student Association provides students with experience in the conceptual, planning, and implementation stages of large-scale projects and enables them to develop such skills as working with others, expressing their personal views, and listening and comprehending. Chen also points out that, "This type of knowledge that cannot be learned from textbooks but it is the type of know how that will be in demand in the future employment market.

The vice president has noticed that some students are concerned that the knowledge they acquire at the university will not be applicable in the workplace and are not sure which professions are related to their majors or whether they will have the chance to make good use of their professional knowledge in the workplace. He reminds students that they can take advantage of existing campus resources in order to explore their personal aptitudes and occupational abilities. Chen cites the Career Center's NTU Internship Program as an example of available resources. Introduced in 2014, the program serves as an intermediary between students and businesses and helps students make advance preparations for entering the job market.

This year, the Career Center also launched the NTU Global Leadership for Tomorrow Program, which invites instructors from the business community to lead classes conducted only in English. The program aims to cultivate the students' international perspective and English communication skills in hopes that they will gain inspiration from the experience and go on to seek employment in the global job market.

In addition to promoting participation in the NTU Student Association and career workshops, Vice President Chen also highly encourages students to qualify to become exchange students so they can go abroad to expand their worldviews. Noting that the media and information through which people make contact in Taiwan are relatively homogenous and of limited benefit in developing a truly international outlook, Chen says that living and studying in a different country greatly enhances one's ability to understand diverse cultures.

Vice President Chen hopes that every NTU student will take full advantage of the resources offered on campus so they can go on to contribute their utmost to society in the future. Declaring "NTU students absolutely must be able to respond to the needs of society," Chen says he hopes NTU graduates not only possess academic abilities, but also become professional leaders who are competitive in the employment market.

Interview with Prof. Lin-Shan Lee

Prof. Lin-Shan Lee, a distinguished professor of the Department of Computer Science and Information Engineering, was elected as an Academia Sinica academician in the Division of Engineering Sciences this year.

In the early 1980s, Prof. Lee and his students at the Department of Electrical Engineering conducted pioneering basic research in the area of Chinese-language speech recognition. Over the more than three decades since then, Lee has stood out as the scholar who devoted the most time and energy to this field that now provides such great convenience to Chinese-speaking smartphone and computer users around the world.

Globally recognized for his influential research, Prof. Lee is also a respected lecturer who has accepted the NTU Outstanding Teaching Award numerous times. He has educated many exceptional professionals for society and encouraged countless students of the Department of Electrical Engineering to pursue careers in research.

During a recent interview, when asked about his students, Prof. Lee casually scans the campus outside his office window as he reveals, "Though I haven't actually calculated the figures, probably more than half of the professors of the Department of Electrical Engineering and Department of Computer Science and Information Engineering have been my students."

When Prof. Lee started his teaching and research career at NTU, the Department of Electrical Engineering was strapped for funding and was hardly comparable to the advanced research institute it has become. Prof. Lee is forever grateful to his students at the time who spent half a semester with Lee tracking down parts and formulating a plan to assemble on their own integrated circuit board capable of processing speech into a binary code. Flashing a smile, Prof. Lee admits, "The machine could only record the first half of a sentence because its memory capacity was just too small."

In those early years, Prof. Lee established three conditions for computer speech recognition: 1) each word must be spoken separately, 2) one computer recognizes the voice of one user exclusively, and 3) recognition mistakes are displayed

on a monitor for human correction. These apparently simple criteria served as an important foundation for research in those days and are the reason Chinese speakers enjoy speech recognition functions on their smartphones today.

Recalling that he had only the one computer and that it could record just one person, Prof. Lee says, "That computer would recognize my voice alone. I figured the students would leave eventually, and I would be the only one to remain."

Commercial virtual assistants, including Apple Siri, Google Now, and Microsoft Cortana, offer Chinese-language speech recognition. Prof. Lee, who has been referred to as a technology promoter behind

Google's voice search and Apple Siri in the media recently, says it is extremely difficult to develop applications that the average user will accept with the limited resources of an academic institution. He points out that he and his students have found that the basic framework of commercial-grade applications corresponds completely to their past research.

In the early 1990s, Prof. Lee and his students confronted hardships in terms of inadequate equipment and facilities, on one hand, and limited availability of international research relevant to Chinese-language speech recognition, on the other hand.

In addition to facing these challenges, Prof. Lee even reached the bounds of his own knowledge. Following a failed attempt to design a computer capable of producing speech, Lee gained valuable insight while discussing his troubles with a linguist at Academia Sinica who had recently returned from abroad. The linguist reminded Prof. Lee that each character in a Chinese language not only has its basic phonetic sound but that its pronunciation is influenced by the characters coming before and after in a sentence it as well.

Reflecting on the circumstances under which he received his letter of appointment to teach at NTU, Lee says, "No one supported my return to Taiwan at the time." He faced not only the opposition of his family and close friends, but moreover an international situation that was unfavorable to his return to Taiwan to begin a teaching career.

"I received my letter of appointment in November of 1978. Then, in mid-December, United States President Carter ended diplomatic relations with Taiwan, and even more people advised me not to be foolish," says Prof. Lee, emphasizing, "Regardless, contrary to the American Dream embraced by many people, I held a Taiwanese Dream that I could never give up."

Prof. Lee took up his teaching post at NTU in 1979, a time when the Department of Electrical Engineering occupied only one building. "We five professors shared the same office," remembers Lee.

While the department now has four buildings, Prof. Lee's office remains in Building Two, where it has been in use for over thirty years.

Introduction to Prof. Lin-Shan Lee

•31st Class of Academia Sinica Academicians

Education

- NTU, Department of Electrical Engineering, BS, 1974
- Stanford University, PhD in Electrical Engineering, 1977

Experience

At NTU:

- Chairperson of the Department and Graduate Institute of Computer Science and Information Engineering (1982-1987), Director of the Commission on Research and Development (2002-2005), and Dean of the College of Electrical Engineering and Computer Science (2009-2012)

At Academia Sinica:

- Director of the Institute of Information Science (1991-1997)

Specialization

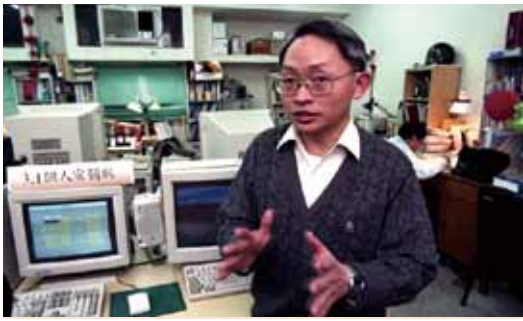
- Digital processing of speech signals

Academic honors

- Presidential Science Prize of Taiwan, 2015
- National Chair Professorship of Taiwan, 2004 and 2007
- Outstanding Scholar Award, Foundation for the Advancement of Outstanding Scholarship, 2002
- Distinguished Academic Contribution Award (in Engineering), Ministry of Education, 1993
- Medal for Distinguished Contributions in Electrical Engineering, Chinese Institute of Electrical Engineers, 1991
- Distinguished Research Award, National Science Council, 1985-1999 (7 times in 14 years)
- Exemplary Global Service Award, IEEE Communications Society, 2014
- Meritorious Service Award, IEEE Signal Processing Society, 2010
- Fellow, International Speech Communication Association, 2010
- Distinguished Lecturer, IEEE Computer Society/ IEEE Signal Processing Society, 1995/2006
- Fellow, IEEE, 1992
- Board Member, International Speech Communication Association, 2001-2005 and 2005-2009
- Chair of Awards Committee, IEEE Communications Society, 1998-1999
- Vice President for International Affairs, IEEE Communications Society, 1996-1997
- Member of Board of Governors, IEEE Communications Society, 1995-1997

Question and Answer Session with Prof. Lin-Shan Lee

What were your primary interests when you were young?



The activity I liked the most during my university years was mountain climbing. For three years from my second year to my fourth, I visited many famous mountains around Taiwan with the Mountain Climbing Club. On our climbing expeditions, we would inevitably pass through local villages and tribal areas and experience a different cultural atmosphere. The sense of homeland I feel for Taiwan was perhaps cultivated in this way.

What aspirations did you hold as a young person?

During my third and fourth years of university I began to want to study in the United States, earn a solid doctorate degree, and return to Taiwan to teach the students following me. So, during classes at Stanford, I would not just strive to gain knowledge but also pay attention to the teaching skills of the professors. I would imitate their strong points and remind myself of areas in which I needed to be especially careful, all for the purpose of becoming a good teacher.

What suggestions do you have for students of the Department of Electrical Engineering?

Compared to my generation, students now have stronger foundations, enjoy a greater abundance of information, and have more agile minds. However, they also pay more attention to the things happening around them and lack the determination to patiently pursue major long-term goals.

Life is like mountain climbing; there are many things going on around us that we must handle, but we can also remind ourselves at the same time that we need to continue advancing towards the major long-term goals and not become stuck in the same place.

I want to tell students: Do the hardest things. The world presents many easy things; let the people who want to do those things do them. If you are among Taiwan's most exceptional young people, then you must try to do the hardest things and make the greatest contributions.

What is the direction of you present research?

▶ *Prof. Lin-Shan Lee (foreground) demonstrates the functions and technology behind the NTU Chinese software.*

Voice search. You could call it the voice version of Google. If it were possible to search the Internet for videos using a designated voice, then users could locate the most vital information in a vast field of noise. For instance, I say "Obama, Trump" and the software helps me find video clips that mention both of these names.

Beyond that is to generate personalized query results. Suppose I identify myself as "a third year student of the Department of Electrical Engineering who hasn't studied machine learning" and who wishes to find "a three-hour machine learning course." Software could search the thousands of videos and internet courses on the Internet and help me locate useful clips, download the clips, and assemble them into a course I can use. I believe the treasures of knowledge of modern humanity are accessible through internet courses.

▶ *NTU Lectures on the Intellectual and Spiritual Pilgrimage (Vol. 9)* shares the personal journeys of eight esteemed leaders of society.

Luminaries' Life Stories Serve as Guideposts for Students

NTU Press published the ninth volume in its *My Road to Learning Collection* in September. Entitled *NTU Lectures on Intellectual and Spiritual Pilgrimage (Vol. 9)*. the new book compiles the personal journeys of eight esteemed leaders of society who had previously shared their experiences and insights with the NTU community by delivering lectures as invited speakers of the university's My Road to Learning Lecture Series.

Over the 18 years since its establishment, the lecture series has brought more than a hundred luminaries to campus to tell their life stories and offer valuable thoughts. The lectures have served as guideposts that students can look to in understanding themselves and arranging their own life plans.

The university offers the general public many ways to learn about the twists and turns and rich learning experiences of the speakers' lives. In addition to being open to the public, the lectures have also been made available as videos through the NTU Speech website and in book form through NTU Press's *My Road to Learning Collection*.

The eight influential personages highlighted in the collection's latest volume come from the worlds of science, art, economics, and literature. By reading about how each of these figures demonstrated the courage to initiate new beginnings, readers come away inspired to write the next page in their own lives.

In "The Humble and Reserved Hematology Authority," we learn how Academia Sinica Academician Dr. Kenneth Kun-Yu Wu threw off the fear of adversity in his search for the infinite wisdom to be discovered in blood.

Readers see Shi-Chi Lee grow from a youth who once stood wavering with hesitation on the pier of Keelung Harbor into a great painter who brought beauty and variety to the art world in "A Companion to Taiwanese Modern Art."

In "The Mosquito Doctor Who Risked His Life for Malaria Prevention," we join Dr. Jih-Ching Lien, who devoted his life to the research of disease-

vector mosquitoes, as he travels to malaria-stricken locales around the globe determined to defend the frontlines in the fight to prevent malaria despite nearly losing his life on several occasions.

"The Female Scientist Who Was Both Common and Extraordinary" reveals that, although Dr. Yu Wang accomplished many firsts as a woman in the world of science, her influential research transcended gender to stand out as her crowning achievement.

Chi Schive crisscrosses the worlds of academia, commerce, and politics, demonstrating his grasp of the subtleties of negotiation and compromise and leading the Taiwanese economy forward, in "Confessions of a Department of Economics Student."

President Yang Touts Global Thinking and International Connections in Address

NTU President Pan-Chyr Yang presided over NTU's 88th Anniversary Celebration Ceremony at the NTU Sports Center on November 15. During the ceremony, President Yang called on every member of the NTU community to adopt global thinking and connect with the world in pursuit of not only Taiwan's development but also the betterment of all of humanity. An excerpt of President Yang's address follows:.

Today is the magnificent day of National Taiwan University's annual celebration. Reaching its 88th anniversary, NTU has amassed an abundance of resources and produced exceptional achievements spanning academic research, the education of professionals, and service to society. For this, we owe a debt of gratitude for the hard work of the 270,000 NTU alumni distributed around the world and all members of the student body, faculty, and administrative staff.

Therefore, on this grand occasion, we present several awards in order to commend the recipients for their contributions and highlight the core value of dedication to the universe that is held by the members of the NTU community. In particular, we recognize the eight winners of the Distinguished Alumni Awards: Yao-Heng Hu, Yung-Ping Lee, James C. Liao, Jen-An Huang, Fermi Wang, Teng-Sheng Hung, Hwa-Lin Lee, and Tez-Chien Wang. Their outstanding work in the humanities, academia, management, and social service deserves our admiration.

In addition, we present the Student Social Contribution Award to Che-Wei Hsu and the members of the student club Children of the Sea for embracing the spirit of helping others and taking specific actions to feed back to society and provide grass-roots service in a remote area. They are the finest examples of putting the university's motto--Diligence, Integrity, Patriotism, and Philanthropy--into action. We also present Outstanding Youth Awards as encouragement to students who have produced remarkable learning achievements.

Aiming to produce internationally competitive professionals, NTU has in recent years promoted curriculum innovations and interdisciplinary teaching in order to help students get beyond the framework of traditional majors and select more adaptive combinations of courses. We have deepened our offering of general education and core abilities courses with the goal of providing students with a broader general knowledge they can use for a lifetime.

The university is also taking greater advantage of digital platforms, integrating advanced technologies and media with our abundant educational resources in order to reduce reliance on the traditional classroom-based approaches of our existing teaching curriculum. This is intended not only to encourage students to take the best courses offered around the world, but moreover to cultivate professionals who see the big picture and have broad vision and to give students a sense of purpose and mission in their studies.

We also encourage innovation development. For instance, the recent NTU Challenge combines education and competition and leads students from concept building to practical applications. Student participation has been enthusiastic and has reached a scale rarely seen in the world.

The university is pursuing organizational restructuring and campus reconstruction in order to build an international learning environment. In addition to introducing special programs aimed at expanding

sources of international students, we are also planning the establishment of an international academy for the cultivation of internationally mobile professionals and forming academic alliances with renowned universities in the United States to increase links between Asia and Silicon Valley.

Furthermore, NTU is participating actively in international organizations. The university represents the nation in the Association of Pacific Rim Universities and has become a member of the association's steering committee, a development that I believe will heighten our international visibility. Moreover, every year we organize bilateral and multilateral symposiums with elite universities around the world so as to strengthen our major research programs and enhance international cooperation.

We are taking these measures because, in confronting changing global trends, whether it is the internationalization of teaching, faculty, or events, the university must persistently pursue innovation and improvement. Boosting international academic contacts is a necessary direction for taking on international competition. I look forward to witnessing all students and faculty members strive to meet this challenge of internationalization head on so we can build an elite university boasting local characteristics and global vision and march forward with our heads high.

May every member of the NTU community encourage each other to earnestly pursue global thinking and international connections. This is not only for the goal of achieving the sustained development of Taiwan, but for an even higher aspiration as well, that of devoting ourselves to the betterment of all of humanity.

Major University of Tokyo Delegation Visits Campus for Interdisciplinary Cooperation Conference

NTU welcomed a major delegation of administrators, faculty members, and students from the University of Tokyo to our campus for the NTU-UTokyo Joint Conference in late November. Held on November 30 and December 1, the conference marked the first time the Japanese university had sent such a large delegation to participate in an interdisciplinary conference at a major strategic partner university in an Asian country since its founding over a century ago, during Japan's Meiji period.

▲ NTU Prof. Hans Hanpu Tung (left) and University of Tokyo Prof. Shin Mizukoshi present a social science wrap-up report during the NTU-UTokyo Joint Conference in November.

The two institutions agreed to jointly organize interdisciplinary conferences when they established a major strategic partnership in 2015. This year's event was NTU's first opportunity to host the joint conference. The University of Tokyo hosted the first conference in December 2015. Executive Vice President for Academics and Research Liang-Gee Chen headed a delegation of nearly 100 NTU administrative officials, faculty members, and students representing more than 30 research disciplines to take part in that conference.

UTokyo Vice President Masashi Haneda led more than 90 faculty members and students to the NTU campus for this year's conference. The Japanese delegation was organized into eleven divisions covering 16 disciplines, while NTU's participants represented ten NTU colleges. In all, more than 300 people attended the conference to engage in interdisciplinary dialogue under the conference theme, "Searching for Solutions to Grand Challenges in East Asia."

In his welcome remarks, NTU President Pan-Chyr Yang noted that the two universities had cooperated continuously from NTU's founding to the current era of innovation in higher education. President Yang called for the two partners to apply global thinking and international connections to create an innovative model for international cooperation. In turn, UTokyo Vice President Haneda delivered a welcome address in which he stated UTokyo and NTU, as elite Asian research universities, should focus on their common interdisciplinary strengths and join hands in order to devise novel solutions to the challenges facing the world.

Addressing the eleven areas of liberal arts, social science, electrical engineering, computer science, oceanography, medicine, public health, mechanical engineering, material science, life science, forestry, agricultural microbiology, and veterinary medicine, the conference laid the groundwork for further significant international interdisciplinary cooperation between NTU and UTokyo.

▲ Honored guests pose for a group photo during the opening ceremony for Taiwan Culture Week in Tsukuba, Japan.

Delegation Visits Japan for Taiwan Culture Week and Global Science Week

Vice President for International Affairs Luisa Shu-Ying Chang led a student and faculty delegation to Japan to take part in the city of Tsukuba's Taiwan Culture Week and the University of Tsukuba's 7th Tsukuba Global Science Week from September 16 to September 20.

NTU and University of Tsukuba initiated their partnership with such cooperation programs as student exchanges in 2007. In 2014, the two universities teamed up for the Campus in Campus project, UT's plan to create trans-border virtual campuses, and established liaison offices on each other's campuses. Such close cooperation has made UT one of NTU's primary international partners.

The opening ceremony for Taiwan Culture Week drew the attendance of such honored guests as Representative Frank Hsieh and Deputy Representative Chung-Shi Kuo of the Taipei Economic and Cultural Representative Office in Japan, UT President Kyosuke Nagata, UT Vice President Caroline Benton, and President Hua-Wei Lin of National Taiwan University of Sport, who also serves as head of the UT Taiwanese Alumni Association.

During the ceremony, College of Medicine student Chin Yeh performed a recital of Taiwanese music.

Vice President Chang also expressed NTU's gratitude to Tsukuba City and UT and presented attendees with cups of organic Dongding oolong tea cultivated by the College of Bioresources and Agriculture. Among the events taking place as part of the culture week were screenings of Taiwanese films and documentaries, introductions to Taiwanese puppet theater, and speeches delivered in the Taiwanese language Hokkien.

Around 20 NTU students and faculty members participated in UT's Global Science Week, serving as moderators and presenting research achievements. Among them were such high-level figures as Associate Dean Tsai-Kun Li of the College of Medicine, Associate Dean Hsinyu Lee of the College of Life Science, Associate Dean Chang-Chuan Chan of the College of Public Health, and Director Ming-Ju Chen of the College of Bioresources and Agriculture. The science fair achieved the highest number of participants in its seven year history, with more than 1,500 students and faculty members from 37 universities in 17 countries taking part.

During the week, representatives of NTU, UT, and France's University of Bordeaux, another partner in the Campus in Campus project, met to discuss trilateral joint Master's degree programs, inter-campus courses, faculty and administrative staff exchanges, and joint research projects.

NTU Hosts University of Hamburg for 2nd Matchmaking Workshop

NTU played host to a delegation from the University of Hamburg during the 2nd NTU-UHH Matchmaking Workshop on October 12-13.

The two universities elevated their long-established partnership to the level of major strategic partnership in 2014. As part of the new relationship, they committed to holding matchmaking workshops that would promote connections between the two faculties and enable them to share research and discuss cooperation projects.

Drawing around 80 participants, October's workshop allowed the two sides to reiterate their dedication to comprehensive internationalization based on a foundation of interdisciplinary cooperation.

On October 12, the workshop began with NTU President Pan-Chyr Yang and UH Vice President Susanne Rupp presenting opening addresses. Invited speakers included Director General Jerry Shyh-Jye Jou of the Ministry of Science and Technology's Department

of International Cooperation and Science Education and Director Stefanie Eschenlohr of the German Academic Exchange Service (DAAD) Information Center Taipei who shared information regarding the resources available for cooperation programs between Taiwan and Germany.

The participants divided into groups based on discipline for nine parallel sessions on October 13. During the sessions, the two faculties discussed upcoming projects and timetables as well as plans for teaching and research cooperation, faculty exchanges, graduate student exchanges, and joint Master's programs.

▲ Executive Vice President for Academics and Research Tei-Wei Kuo (right) and Seoul National University President Nak-In Sung smile while exchanging gifts.

NTU Draws Praise for Entrepreneurship Drive at AEARU Meeting in South Korea

Executive Vice President for Academics and Research Tei-Wei Kuo and Vice President for International Affairs Luisa Shu-Ying Chang represented NTU President Pan-Chyr Yang at the 22nd Annual General Meeting and 39th Board of Directors Meeting of the Association of East Asian Research Universities, which took place at Seoul National University during October 14-16.

At the directors meeting, Executive Vice President Kuo won for NTU the honor of serving as the host university for the AEARU's 24th Annual General Meeting and 43rd Board of Directors Meeting in 2018, the year that NTU will celebrate its 90th anniversary.

Similarly, this year's meetings were scheduled to coincide with SNU's 70th anniversary. This provided the 17 university presidents, vice presidents, and international affairs directors that participated in the meetings the opportunity to attend the South Korean university's 70th anniversary ceremony, which was presided over by SNU's President Nak-In Sung. Executive Vice President Kuo presented President Sung with a wood carving specially selected by the Office of International Affairs from the NTU Experimental Forest.

Founded in 1996, the AEARU celebrated its 20th anniversary this year. NTU and National Tsing Hua University are the only

▲ Executive Vice President Tei-Wei Kuo delivers a speech introducing NTU's Innovation and Entrepreneurship Program and the Stanley Wang D-School@NTU.

Taiwanese universities that are members of the association and share Taiwan's membership on the board of directors on a rotating basis. NTHU President Ho-Cheng Hong's current term on the board comes to an end this year and NTU President Yang will begin a new term in 2017.

During the general meeting, Executive Vice President Kuo delivered a speech introducing NTU's Taidah Entrepreneurship Center. Kuo described how NTU began its drive to promote entrepreneurship by opening NTU Garage in 2008 and then went on to establish the Innovation and Entrepreneurship Program in later years and the Stanley Wang D-School@NTU in 2015. He emphasized that NTU's mission for education, research, and innovation is to teach students to not fear failure and to have the courage to innovate.

Following his speech, many university representatives sought Kuo out to praise NTU's efforts and ask for more details about its strategies. In particular, representatives of the Korea Advanced Institute of Science and Technology, Pohang University of Science and Technology, and Hong Kong University of Science and Technology expressed their deep interest in NTU's D-School.

During the AEARU meetings, Executive Vice President Kuo bumped into many old friends from academia and met with university presidents and vice presidents. These included Peking University President Jian-Hua Lin and the vice presidents of Nanjing University and Tsinghua University. He also met with President Kyosuke Nagata of the University of Tsukuba, with whom he discussed a three-university cooperation alliance and exchanged opinions regarding numerous academic cooperation topics.

In addition to hosting the AEARU meetings in 2018, thanks to the hard work of the Office of International Affairs, NTU will also host the Annual Presidents Meeting of the 45-member Association of Pacific Rim Universities that year. Together, the two events are expected to draw 35 to 40 university presidents or 40 to 45 vice presidents as well as over 100 administrators to the NTU campus and provide an ideal opportunity for internationalization plans and matchmaking efforts with other institutions.

DEPUTY VICE PRESIDENT SPEAKS ON INTERNATIONALIZATION AT INVITATION OF KYUSHU UNIVERSITY

▲ Deputy Vice President for International Affairs Bennett Fu (second from right) shakes hands with Kyushu University's President Chiharu Kubo. The pair are flanked by Kyushu University's Executive Vice President for International Affairs Reiko Aoki (right) and Senior Vice President in Charge of the Top Global University Project Kazuo Ogata (left).

Deputy Vice President for International Affairs Bennett Fu traveled to Japan to deliver a report during Kyushu University's 2nd SHARE-Q Seminar: World University Rankings—Kyushu University's Challenge toward a World Class University on October 17. Seeking to boost the seminar's international perspective, the Japanese university invited Deputy Vice President Fu to elaborate on NTU's position in the various world ranking systems as well as spell out its strategies for the promotion of internationalization and bilateral cooperation.

The SHARE-Q Seminar is one of the projects KU has developed in response to the Japanese government's Top Global University Project. The issues addressed in the seminars are intended to enhance the KU community's awareness of the university's drive to join the ranks of the world's top 100 universities and understanding of future trends. NTU was the first institution from outside of the KU system to receive an invitation to present a report during a SHARE-Q Seminar.

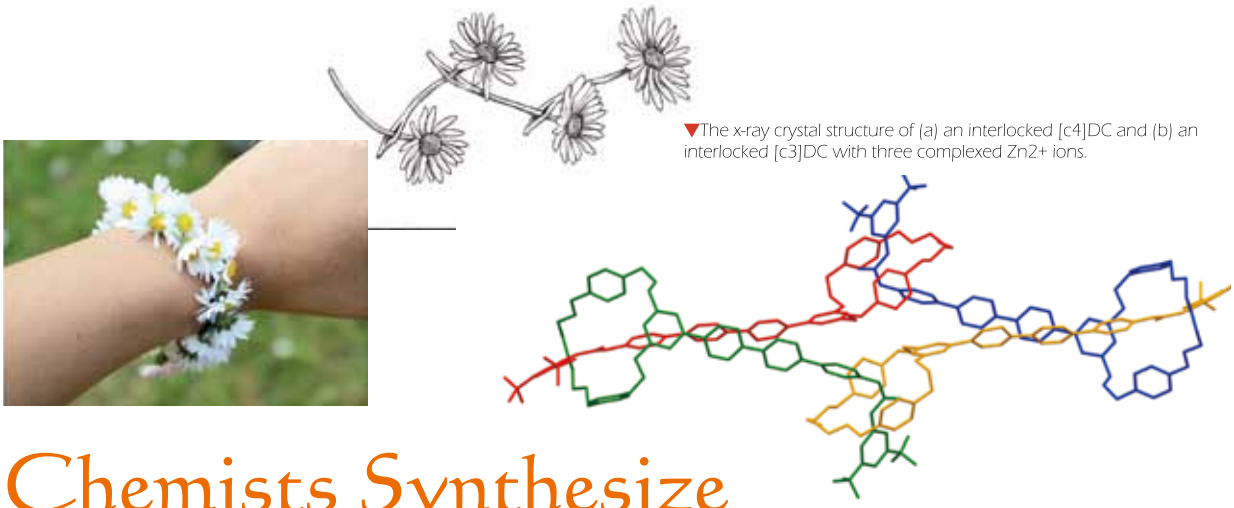
During his hour-long report, Deputy Vice President Fu discussed the progress of NTU's internationalization efforts and its experience in international rankings before an audience of around one hundred faculty members and administrative staff from KU and elsewhere. The audience included some of KU's top officials, including President Chiharu Kubo.

Fu divided NTU's internationalization strategy into three areas: enhancement of the university's brand identification internationally, implementation and then cultivation of exchange and cooperation programs. He said NTU actively seeks invitations to present at the conferences of international organizations and the world's three leading education fairs (APAIE, NAFSA, and EAIE), and it works together with partner universities to draft cooperation programs and presentations.

Fu cited the Strategic Partnership Program as an example. Launched in 2013, the program first involves holding joint conferences with other universities, then establishing links between disciplines, and finally developing in depth cooperation plans. A seed fund created for the program plays a substantial role in deepening cooperation between NTU faculty members and those of selected partner universities.

Fu concluded his report by highlighting four key points: A. activeness and action, B. backup and bravery, C. communication and consensus, and D. deregulation and do it. During the question and answer period, KU's students and faculty members engaged in enthusiastic dialogue with Deputy Vice President Fu and praised NTU for its foresightedness in its pursuit of internationalization.

After the report, KU President Kubo told Fu, "We were able to learn a great deal from NTU's advanced global strategy to enhance its international network and academic reputation. I look forward to dynamic future collaboration in diverse areas between our two institutions."



▼The x-ray crystal structure of (a) an interlocked [c4]DC and (b) an interlocked [c3]DC with three complexed Zn2+ ions.

Chemists Synthesize Supramolecular Daisy Chains Capable of Muscle-like Motions

Inspired by the garlands of flowers crafted by children around the world, a research team of the Department of Chemistry has created supramolecular daisy chains capable of muscle-like motions that could one day power molecular machines that perform mechanical tasks in multiple dimensions. Led by Prof. Sheng-Hsien Chiu, the team reported its groundbreaking research in the article, "Mechanically interlocked daisy-chain-like structures as multidimensional molecular muscles," in the September 2016 issue of *Nature Chemistry*.

Cyclic molecular daisy chains have long been attractive synthetic targets for supramolecular chemists because of their beautiful interlocked structures and possible muscle-like motions. In the article, the team describes the assembly of three-link molecular daisy chains ([c3]DCs) as well as four-link molecular daisy chains ([c4]DCs). The team's achievement marks the first successful exclusive synthesis of [c4]DCs from simple hermaphroditic monomers.

These interlocked [c3]DCs and [c4]DCs function as artificial muscles that perform work in multiple dimensions at the molecular level. Indeed, both of them present two possible states with different lengths between the stopping termini: a "stretched" state (longer form) and a "contracted" one (shorter form). Switching from one state to another simply occurs upon the application of a chemical stimulus (Zn2+ ions).

All three individual components of the [c3]DC can be contracted or stretched linearly on the same plane, allowing the [c3]DC to perform a two-dimensional molecular muscle-like motion. The switching of the [c3]DC between its two planar triangular structures ("stretched" and "contracted" forms) occurs with a change in "size" (as measured by the distance between its termini) of approximately 23%. By repeating the process of addition and removal of Zn2+ ions, the contraction-stretching motion can be reversibly performed for at least several times.

As for the interlocked [c4]DC, the "stretched" and "contracted" states present square- and tetrahedron-like structures, respectively. Therefore, the switching events will produce an overall three dimensional motion in such cases. The changes in the distance between the termini (36%) and the radius of the circumscribed sphere (18%) upon proceeding from the "stretched" to "contracted" state of the [c4]DC demonstrate that it might be able to mimic biological muscles, since their one-dimensional movement achieves an approximate 27% change in size.

As these new structures are artificial muscles that, unlike the one-dimensional biological muscle, contract and stretch in 2D or 3D, the development opens interesting perspectives concerning molecular machines capable of performing mechanical tasks in multiple dimensions. Notably, if the muscle-like motion of such structures can be selectively controlled in one or more dimensions, smart (i.e. stimuli-responsive) materials capable of precise changes in size or shape in 3D space at a macroscopic level, that is, totally moldable materials that can be reversibly shaped at will, would be conceivable.

Reading Room Houses Children's Picture Books in a Relaxing Atmosphere

The Department and Graduate Institute of Library and Information Science opened the Children's Reading Material Area in 2008 to strengthen the promotion and research of children's literature. Located on the second floor of the Library and Information Science Building, the reading room houses a collection of reading materials for children and teenagers that includes more than 4,000 publications, ranging from illustrated books and fairy tale books to educational reading materials and teen novels. Besides the Chinese-language books, there are many books in foreign languages, including Japanese, English, and other European languages. Most of the books can be checked out.

Many students enjoy the reading area due to the casual, relaxing atmosphere created by the wooden floor, red sofas, and warm lighting. Paging casually through the colorful picture books, one easily loses oneself in a world of innocent thought and experience.

Students use the Children's Reading Material Area for such activities as designing courses and organizing book exhibitions. The most recent exhibition was "The Picture Book Fair for Big Children." The students who organized the exhibition say that most people believe picture books are for children when in fact children often fail to see the deeper meaning the authors have buried inside. One of the students, Pei-Ni Chiang, says, "Picture books are able to convey their content easily and readers don't need to spend a great deal of time to understand their profound messages.

Occupying one corner of the reading area is a large display of emotional healing picture books for children. The display was created following Prof. Chen Su-may Sheih's campaign to send children's bibliotherapy picture books to Sichuan Province in China in the aftermath of the 2008 Sichuan earthquake. All of the books presented in the display are listed in Prof. Sheih's book *Emotional Healing Picture Books for Children: An Annotated Bibliography*. Prof. Sheih says that every person possesses an innate resilience and that the characters in picture books are like invisible important others who serve to provide comfort when readers are feeling negative emotions.

Prof. Sheih chose to initiate her research into picture book bibliotherapy in response to witnessing many people burdened by frustrations and suffering unfortunate events. Believing illustrated books would be an especially good medium for bibliotherapy, she began to research the impact of picture books in the emotional healing of children, junior and senior high school students, university students, and adults.

▲ Prof. Chen Su-May Sheih holds a children's picture book in the Children's Reading Area on the second floor of Library and Information Science Building.

◀ Harvesters tend their plants at a tea plantation in Pinglin Township.

International Degree Cultivates Climate Change and Sustainable Development Professionals

▲ A tea plantation manager explains the condition of tea leaves to students.

The International Master's/Doctoral Degree Program in Climate Change and Sustainable Development in the College of Science is an interdisciplinary program that brings together faculty members and courses from the natural sciences and the social sciences, and aims to cultivate professionals with multi-disciplinary abilities and global perspectives. Established this academic year, IPCS has successfully admitted three doctoral and 14 master's degree students.

Reflecting the interdisciplinary composition of the program's faculty, IPCS has assembled 19 faculty members from ten departments and graduate institutes of five colleges at NTU. The professors team up to jointly teach basic as well as advanced courses at both the master's and doctoral levels in the domains of natural sciences and social sciences.

IPCS strives to foster future leaders who possess interdisciplinary knowledge concerning climate change and sustainable development who will go on to have careers as researchers or policymakers or work in industry. The students must learn to communicate and conduct research across disciplines by developing their talents across diverse academic fields. Case studies and seminars equip students with the practical skills they will need to promote sustainable development and design solutions to the problems caused by climate change.

IPCS's comprehensive and in-depth teaching strategies lead students to understand the core issues of climate change and sustainable development. The program broadens the experiences and perspectives of students, enabling them to better analyze events and issues related to climate change and sustainable development. While IPCS aspires to provoke the students' desire and passion to explore vital human-environment interactions, it also directs their attention to active learning, data collection, logical discourse, analysis, instrument operation, and practical skills.

In addition, IPCS endeavors to restore the holistic nature of knowledge by transcending the limiting biases caused by the specialization of knowledge. The program's ultimate goal is to cultivate students into interdisciplinary experts in climate change and sustainable development by integrating global and local experiences, employing scientific and humanities knowledge, and teaching individual and collective interdisciplinary problem-solving skills that can be use to address complex and multifaceted issues.

◀ Students pose for a group photo during an indigenous culture film festival.

▼ Students take part in a culture workshop organized by the Indigenous Student Resource Center.

RESOURCE CENTER HELPS INDIGENOUS STUDENTS TO FIND FULFILLMENT

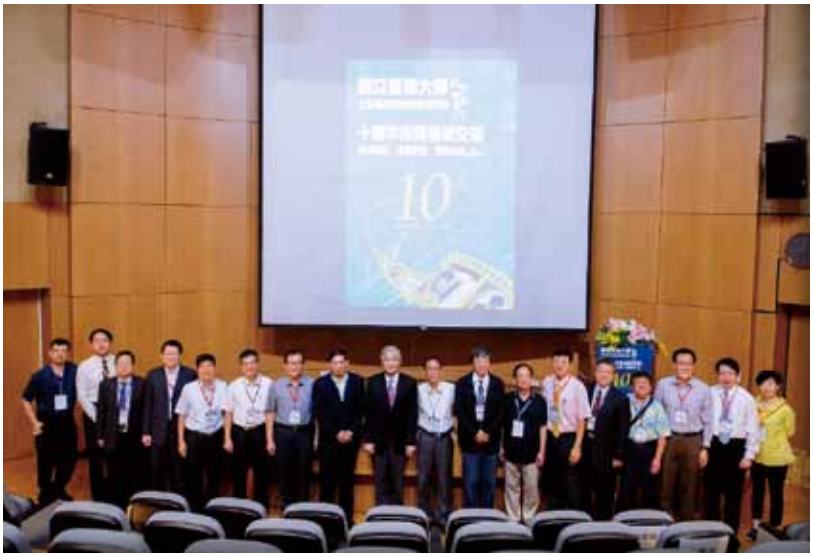
The NTU Indigenous Student Resource Center provides a full range of support services for indigenous students. The center organizes activities, publishes a newsletter, and raises awareness on available campus resources to help indigenous NTU students to find fulfillment in their everyday lives and in their studies.

In order to safeguard the educational rights of indigenous students, the Resource Center was established at NTU in 2013. In 2014, the center was initially managed by the Student Activity Center Administration Division. Later, in March 2016, the center was elevated to a university-level unit in accordance with the "Establishment Guidelines for the National Taiwan University Indigenous Student Resource Center."

The center organizes a wide range of activities for indigenous students throughout their four years on campus. Among the activities are orientation and welcome activities for indigenous first-year students, lectures on the Indigenous Student University Entrance Examination, public financial aid for overseas studies, and indigenous culture, an indigenous culture film festival, an information session introducing first- and second-year students to the center's services, a series of employment counseling activities, and an English listening and conversation program organized in coordination with the Foreign Language Teaching and Resource Center.

The center's Indigenous Students Resources Manual helps indigenous students to quickly adapt to life on campus and establish a support network of friends, so they are able to pursue excellence in their studies free of unnecessary complications. The manual offers a general introduction to the center and addresses a comprehensive range of topics, including: financial assistance (financial aid programs, scholarships and grants, and emergency aid); course-based and extracurricular learning (study skills, learning resources, and student clubs); services and counseling (dormitories, psychological counseling, student safety, health insurance services, applications, and relevant websites); overseas study and public employment information; welfare and services provided by city and county government indigenous peoples agencies; and introductions to Taiwan's indigenous peoples.

The resource center also publishes a monthly newsletter that has already reached its 23rd issue. Providing special reports, book reviews, and information concerning scholarships and activities, the newsletter is posted on Facebook and sent through an online community to indigenous students at NTU, National Taiwan Normal University, and National Taiwan University Science and Technology. It is also available through the NTU epaper website, where it now has hundreds of subscribers.



Biomedical Electronics and Bioinformatics Institute Celebrates 10th Anniversary

The Graduate Institute of Biomedical Electronics and Bioinformatics celebrated its 10th anniversary with a celebration ceremony and special anniversary activities that included research presentations and a roundtable forum on October 1. Among the honored guests invited to speak during the opening ceremony were NTU President Pan-Chyr Yang, Executive Vice President for Academics and Research Tei-Wei Kuo, Dean Ming-Syan Chen of the College of Electrical Engineering and Computer Science, and Academia Sinica Academician Chung-Hsuan Chen.

In the decade since its establishment, the graduate institute has grown to boast a faculty of nearly 40 professors and more than 100 students. Around 100 attendees took part in the celebration activities.

The anniversary activities took place under the theme of "interdisciplinary integration, biomedical innovation, and future vision." In a demonstration of foresighted academic innovation, four Academia Sinica academicians delivered lectures presenting their innovative research accomplishments in the areas of biological technology, medical industry, health care, and cancer genomics.

A roundtable forum assembling representatives from academia, industry, and government and panel discussion with institute alumni addressed the problems confronting Taiwan's biomedical engineering industry. The forum and panel discussion featured outstanding institute alumni from the Ministry of Science and Technology's Department of Engineering and Technologies, Academia Sinica, Industrial Technology Research Institute, AppWorks Ventures, Philips Taiwan, Miiann Technology, iXensor Inc., and U-ARK Tech Co.

In addition, participants enjoyed an anniversary video created by the institute's students and faculty that celebrated the achievements of the institute over the last decade.

President Yang Promotes NTU Cancer Center in New York

NTU President Pan-Chyr Yang traveled to New York City in October to join the Yonglin Healthcare Foundation in promoting the NTU Cancer Center at a symposium on "State-of-the-Art Precision Medicine for Cancer Therapy in East Asia" on October 14.

Foxconn Chairperson Terry Guo has donated the funding for several important medical and science buildings through the Yonglin Healthcare Foundation. Among them, the NTU Cancer Center and a proton therapy center are scheduled to open in 2018.

While in New York, President Yang visited such prestigious academic institutions as the Columbia University Medical Center for academic exchanges. He also sought to entice NTU alumni from the college of medicine in the United States to return to Taiwan to join the NTU Cancer Center team and join in developing the center into a truly world-class institution.

Dr. Karen W. Lin, the assistant dean of Global Health at Rutgers University's Robert Wood Johnson Medical School, moderated the symposium, which was attended by prominent medical scholars and experts from Taiwan and the United States.

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