2007 target for launch of first Singapore-made micro-satellite

X-SAT will be built at a cost of $10 million at the new Centre for Research in Satellite Technologies (CREST)

NTU has set its sights on space again. In April 1999, the University made history when it put the first Singapore-designed communications payload in space. The landmark launch of Merlion on the UoSAT-12 mini-satellite from Kazakhstan was a joint undertaking with the University of Surrey in UK.

This time, NTU will be working with researchers from DSO National Laboratories to accomplish its new mission – that of sending an entirely made-in-Singapore micro-satellite into space. The 120-kg LEO (Low Earth Orbit) micro-satellite, to be called X-SAT, will orbit the earth every 19 minutes to monitor the land and sea for forest fires and ocean oil slicks, and to acquire and transmit data via low power mobile terminals.

As an experimental platform, X-SAT offers NTU and DSO opportunities to develop and demonstrate small satellite technologies suitable for use in LEO satellites.

The X-SAT project was initially launched in early 2000 as an internally-funded inter-School research project of the Satellite Engineering Centre (SEC). This centre was set up in June 1999 following the successful launch of Merlion. The University’s Satellite Engineering Programme has been in place at the School of Electrical and Electronic Engineering since 1995.

In parallel, DSO National Laboratories has been acquiring expertise in micro-satellite systems since 1997. For example, a team of DSO engineers participated in the development of the KITSAT-4 micro-satellite undertaken by the Satellite Technology Research Centre of the Korea Advanced Institute of Science and Technology.

On 1 December 2001, in a timely and synergistic tie-up, NTU and DSO National Laboratories joined forces to advance Singapore’s expertise in satellite engineering R&D. Under the NTU-DSO collaboration, SEC of NTU will be expanded into the Centre for Research in Satellite Technologies (CREST). There a team of 20 – 30 full-time staff from NTU and DSO will build X-SAT for the launching pad by 2007.

“NTU is excited about this collaboration because both NTU and DSO will benefit from the synergy of their somewhat different R&D strengths and experiences for the X-SAT project,” said NTU Deputy President Prof Er Meng Hwa.

Present-day small satellites incorporate many recent advances in micro-electronic and computing technologies. These LEO satellites or constellations of such satellites are able to provide commercial-grade personal mobile communications and earth imaging applications at relatively low costs. Thus, if successful, the NTU-DSO venture could lead to new business opportunities or spin-offs.

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Library 1 renamed Lee Wee Nam Library

In recognition of the generous $10 million donation from Lee Hiok Kee Private Limited for the establishment of the Lee Wee Nam Endowment Fund in Life Sciences on 19 June 2001, NTU has named one of its libraries – Library 1 – after the late Mr Lee Wee Nam, who founded the company.

“We offered it to be named after the late Mr Lee Wee Nam, an honourable man, whose spirit of charity and love for the community continue to live in the hearts of his descendants,” said NTU President Dr Cham Tao Soon of the self-made man – a prominent banker, entrepreneur, community leader and philanthropist.

Apart from the renaming, NTU has also acknowledged the philanthropy of the late Mr Lee and his family with the display of a bronze bust of Mr Lee at the lobby of the library.

The income generated from the invested Lee Wee Nam Endowment Fund will enable NTU to appoint visiting professors of international eminence to teach, give public lectures and undertake research in the field of life sciences, helping the University to reach the pinnacle of excellence in life sciences education and research.

Distinguished guests streaming out to admire the new library signage after the renaming ceremony

Two Schools renamed

The School of Civil and Structural Engineering (CSE) has been renamed the School of Civil and Environmental Engineering (CEE) to better reflect the School’s established strengths and role as a regional resource and R&D centre in environmental engineering.

The School of Communication Studies (SCS) has incorporated the Division of Information Studies from the School of Computer Engineering and is now known as the School of Communication and Information (SCI).

The merger reflects an emphasis on communication and IT disciplines, both vitally needed to thrive in today’s rapidly evolving mass media industry. Such an emphasis will facilitate better training and research in the complementary fields of information and communication.

Vice-Dean elected President of International Medical Informatics Association

Prof Lun Kwok Chan, Vice-Dean of the School of Biological Sciences (SBS), has been given the honour of leading an established international body. In September 2001, he was inaugurated as the 10th President of the International Medical Informatics Association (IMIA – www.imia.org). He is the second Asian to hold this office since the establishment of the world body in 1967.

IMIA promotes the use of informatics in health care and biomedical research, and advances international medical cooperation through its network of 20,000 members worldwide. The association also organises MEDINFO, the world congress on health and medical informatics held once every three years.

During his term of presidency from 2001 – 2004, Prof Lun plans to help “bridge the medical informatics divide” by spearheading efforts to promote medical informatics in Africa and other developing countries, and by overseeing the creation of a virtual university in medical informatics to promote the field through distance learning.

A biostatistician for over 25 years,
NTU and four top Asian universities tie up in environmental technology

The Asian Environmental Research Alliance Partnership is set to revolutionise the environmental technology industry

There is a pressing need to seek state-of-the-art environmental knowledge and technologies to tackle a host of environmental issues in the Asia-Pacific region.

NTU, University of Hong Kong, Korea Advanced Institute of Science and Technology, University of Tokyo and National Taiwan University have pooled their resources to ensure that environmental challenges – both old and new – are adequately met. The five institutions signed an MOU on 30 October 2001 in conjunction with IWA Asia Environmental Technology 2001 to formalise their partnership.

Professor Tay Joo Hwa, who heads the Environmental Engineering Research Centre (EERC) and Division of Environmental and Water Resources Engineering at the School of Civil and Environmental Engineering, said that each of the five institutes in the alliance has its own research specialities, all of which are of world class standards. In fact, NTU has been collaborating with each of its four partners over the years to develop state-of-the-art green technologies (see inset).

The current environmental tie-up lays the foundation for the establishment of a vibrant five-way partnership and will provide the momentum for the development of strategic research collaboration in key areas of environmental science and engineering. It will achieve this through the transfer of information, technology or human resources from one institution to another for mutual interest and benefit. Direct contact and cooperation among faculty and research staff will be encouraged as much as possible.

The collaboration will eventually be expanded to other areas and disciplines involving more academic and research institutions.

The five partners will drive environmental research in the region

Partnerships revolutionising green tech

- Hong Kong University – biotechnology
- Korea Advanced Institute of Science and Technology – membrane technology
- National Taiwan University – sludge treatment and reuse
- Tokyo University – anaerobic digestion

Prof Lun Kwok Chan is the second Asian to be elected President

He has given his professional input to many biomedical research projects nationally and internationally. His research interests are focused on medical informatics, specifically telemedicine and the development of intelligent Web agents. At SBS, he plans to work on exciting topics in the rapidly emerging field of biomedical informatics (also known as clinical bioinformatics).

Bioinformatics deals with the data-and image-processing and information tools and techniques in biology that are instrumental in translating molecular or genetic information into biological processes or pathway knowledge. Coupling bioinformatics with the tools and techniques that deal with clinical information (such as computerised patient records and clinical decision systems) will create opportunities to correlate information about a person’s genetic blueprint (genotypic information) with the characteristics and behaviours that actually develop from it (phenotypic information).

Elaborating, Prof Lun said: “While bioinformatics enables us to understand fundamental knowledge about biological processes, the inclusion of clinical information in biomedical informatics opens the gateway to genetic risk profiling of patients, new paradigms in disease diagnoses and prognoses, and novel approaches to drug discovery based on the correlation of genetic and molecular knowledge of diseases with clinical information of their patients.”

Prof Lun hopes that by venturing into biomedical informatics, his biostatistics and medical informatics backgrounds will enable him to explore the challenging problems of 21st century biology and medicine.
As we enter the 21st century, the bases of international security are undergoing profound changes. The end of the Cold War, the emergence of new power centres in East Asia, the outbreak of ethnic and nationalistic conflicts around the globe, and the proliferation of weapons of mass destruction are some of the factors that have transformed the nature of conflict in the international arena.

Security is also no longer a matter of military force alone. Economic and ecological concerns, migration, drug trafficking and other non-military issues have become more salient in the security agenda.

Against this backdrop, professionals in the fields of defence and foreign relations have to be conversant with new security concepts and strategic theories. Equally vital for their career success is know-how in strategic planning, design and policy analysis. Such competencies are also useful for corporate planners grappling with the complexities of globalisation.

The new Master of Science (International Relations) programme offered by the Institute of Defence and Strategic Studies (IDSS) will equip graduates with a systematic understanding of the theories purporting to explain the nature of interactions between states, as well as non-state actors, in an increasingly globalised international system. Candidates must complete two core subjects (The Study of International Relations and International Political Economy), four electives, a dissertation of 10,000 words and a Special Topic. IDSS will also be offering PhD programmes in Strategic Studies and International Relations in the new academic year.

For more information, visit http://www.idss.edu.sg.

A unique international collaboration in logistics education

NTU teams up with Erasmus University in the Netherlands to offer the first of its kind executive programme in global supply chain management

A partnership between the Centre for Engineering and Technology Management of the School of Mechanical and Production Engineering and Erasmus University in Rotterdam has produced a unique executive programme titled “Managing Global Supply Chains: The Strategic Challenge for 21st Century Business”.

This programme combines the latest research yields of both universities and the practical experiences of industrial partners from the two countries. It is conducted in three parts: the Rotterdam Module, the Collaborative Project Module and the Singapore Module. The participants learn frameworks, tools and techniques for using advanced information and decision technologies to develop effective supply chain cooperation and relationships.

The Rotterdam Module took place in September 2001 at the Rotterdam School of Management, Erasmus University. Five executives from Singapore spent a week with their six European counterparts studying the latest developments in global supply chain management. This module also covered global port management from the European perspective. At the end of the module, the participants returned to their respective companies and worked part time on a six-week long-distance collaborative project from their home base. In the week-long Singapore Module held in November 2001, all 11 participants attended lectures by NTU professors and local industry experts as well as explored recent developments in the integration of supply chains and strategies for creating e-business infrastructure.

Both NTU and Erasmus University intend to conduct the programme again in September – November 2002.

A unique international collaboration in logistics education

NTU one of Asia’s top 20 IT-savvy enterprises

NTU has been identified as one of Asia’s top 20 IT-savvy enterprises in the annual Intelligent Awards 2001/2002 presented by Intelligent Enterprise Asia. The Intelligent20 Awards recognise the strategic use of IT by Asian corporations and organisations.

Award winners were handpicked by an independent panel of judges from eight leading management and IT consultancies – AT Kearney, Accenture, Andersen, Atos Origin, Deloitte Consulting, KPMG Consulting, Mercer.
NBS to run Executive MBA course in Shanghai

The 18-month bilingual programme, which begins in July 2002, is the result of a partnership between NTU and top Chinese University Shanghai Jiao Tong.

From the new academic year beginning July 2002, the Nanyang Business School (NBS) will be offering its Executive MBA Programme in Shanghai. This is the first time that a Singapore university is offering its MBA degree programme to senior executives in China.

The programme, offered in partnership with Shanghai Jiao Tong University, is targeted at senior Chinese managers who wish to pursue a graduate management degree without interrupting their careers. Shanghai Jiao Tong is one of China’s top five universities and among its oldest tertiary institutions.

The partnership is timely in view of China’s strong economic growth and its recent entry into the World Trade Organisation, which has fuelled a strong demand for executive training in China. By working with Shanghai Jiao Tong, NTU will be able to offer its services and expertise as well as build networks and contacts that could lead to new educational or business alliances with the Chinese community.

The MBA programme, to be conducted in both English and Mandarin, will feature a unique classroom-workplace format involving a short stint in Singapore and possibly a Business Study Mission abroad. Lessons will be held at the partner university’s campus. Both NBS professors and professors from Shanghai Jiao Tong’s Aetna School of Management will teach the course. The degree will be awarded by NTU.

Offering its expertise to Chinese professionals is nothing new to NTU. Since 1998, the University has trained 250 senior Chinese government officials such as mayors and governors of provinces through its Master of Science (Managerial Economics) programme.

Prof Ye Qu Yuan, Vice-President of Shanghai Jiao Tong University, said: “The success of senior managers in China depends upon them acquiring competencies that include keen analytical skills, broad cultural sensitivity and clear strategic vision. We believe that working with one of the best business schools in Asia – a school that understands the needs of these senior managers – will enable us to offer a high-impact Executive MBA in Shanghai.”

Tapping on Irish expertise

In a first for NTU, a general Memorandum of Understanding (MOU) was signed with an Irish University. The tie-up with University of Limerick, formalised on 5 November 2001, covers information exchange, joint research activities, as well as visits by and exchange of graduate and undergraduate students and staff.

The MOU was signed by Dr Cham Tao Soon, NTU President, and Professor Roger Downer, President and Vice Chancellor of University of Limerick. Prof Brian Lee, Director of International Relations at NTU, and Professor Noel Whelan, Vice President and Dean, University of Limerick, witnessed the signing.

Profs Downer and Whelan noted the similarities in the teaching and research programmes of both universities after visiting some of NTU’s research centres such as the Information Communication Institute of Singapore, Advanced Materials Research Centre and Computer Integrated Medical Intervention Laboratory.

NTU was selected for its success with WorldPay eCommerce Tools, a payment service implemented by the Office of Academic Services (OAS) and the Alumni & Endowment Office (AEO). While OAS uses WorldPay to accept online payment for application to undergraduate and postgraduate courses, AEO uses the e-service to receive donations online (iGift) and to allow alumni to shop and pay for purchases online (iShop).

NTU News
Day of Asian whiz kids

Shanghai Jiao Tong University manages a computing feat at the “Olympics of Computing”, hosted by the School of Computer Engineering for the second year running

Thirty-seven teams of undergraduates representing 22 universities from Asia converged at NTU on 30 November 2001 to compete in the 2001 ACM (Association of Computing Machinery) Asia Programming Contest.

The ACM Asia Programming Contest is the first part of a two-tiered competition known as the International Collegiate Programming Contest. Organised by ACM and sponsored by IBM, this prestigious annual competition pits teams of university and college students against one another in the computing battlefield where quick problem-solving is king.

In the Nanyang Auditorium, the students raced against time to produce working programs to eight problems, submitting their solutions electronically to a team of judges who tested each one for correctness, completeness and robustness. The teams were awarded a balloon for every correct solution produced and slapped with a time penalty for each incorrect solution.

The winning team came from Shanghai Jiao Tong University who, with minutes to spare, managed the amazing feat of solving all eight questions within five hours. This team will join 59 other teams at the 26th World Finals in Hawaii this March.

Anyone interested in trying their hand at solving the problems can go to http://www.ntu.edu.sg/acm/ProblemSets2001.htm.

Grooming future experts in telemedicine

Nurturing creative young scientists and technopreneurs is the goal of the NTU-JC Challenge, organised for the third time from November 2001 to February 2002

Over 350 pre-university students, participants in the NTU-JC-SGH Challenge 2002, have been given a headstart in the vast and exciting world of telemedicine.

A promising growth area, telemedicine involves the use of telecommunication for remote medical diagnosis and treatment. During a five-day residential programme held on campus in November, the students from 15 junior colleges and two centralised institutes attended talks and workshops by NTU professors, SGH specialists and other experts. The sessions introduced them to the latest topics in biomedical instrumentation and communication, networked virtual reality, the role of medical symptoms, and advanced medical care. Visits to SGH were also conducted.

During the rest of the year-end school vacation, the students then worked in teams of 15 – 20 to turn their newfound knowledge into real-world applications. Their creations will be showcased at a Grand Finale in February 2002, where the best projects will win awards sponsored by SingTel, Siemens Medical Solutions and Bayer.

Launched in 1999, the annual NTU-JC Challenge aims to nurture a keen interest in science and technology among local pre-university students. For the first time, the Singapore General Hospital (SGH) is a co-organiser in this endeavour.

“While putting their problem-
Prize-winning take on home automation

Five third-year computer engineering students have developed a web service that empowers homeowners through WAP and SMS

Computer engineering students Arun Kishore, Arun Jacob, Dev Ramnane, Nishith Prabhakar and Rajat Dev recently got up close and personal with Bill Gates; they came in third in the inaugural Microsoft Asia Student .NET Competition and received their prize from the Chairman and Chief Software Architect of Microsoft Corp himself.

The Microsoft Asia Student .NET Competition received entries from over 300 universities in 11 Asian countries. Each team showcased their innovations and programming skills on the .NET platform, Microsoft’s software platform for the development of XML web services.

After beating 23 local teams – from four polytechnics and two universities – to take the top spot in the National Microsoft .NET competition in September 2001, the NTU team went on to compete against twelve other finalists in the Asian finals in Seoul on 17 October 2001.

The team’s web service enables consumers to control home appliances and other “smart devices” remotely through WAP, SMS or an HTML page on the Internet. This means that consumers can operate their home air-conditioning system from wherever they are via SMS or be informed through WAP about a fire or security breach at home.

The intelligent home automation system developed also takes into account the future, when pervasive computing becomes commonplace and all manner of “smart devices” can be easily interfaced to the user’s home computer. So, one can envisage, for example, smart refrigerators sensing that milk stock is low and communicating this fact to their owners via SMS. The possibilities are limitless!

Students at SGH watching a radiographer performing a CT scan of a patient’s abdomen using a state-of-the-art computed tomography scanner
Students

Finding peace in a bowl of tea

Japanese Grand Tea Master Sen Soshitsu XV shows how the preparation and drinking of tea is a ritual practised in the Japanese tradition to meet man’s need for inner tranquility

Tea is a popular choice of beverage worldwide, but nowhere in the world does tea contribute as much to the cultural milieu as in Japan where the preparation and drinking of tea has developed into a distinct artistic accomplishment.

In a rare arrangement, the Grand Tea Master, (Oiemoto) Hounsai Sen Soshitsu, was flown in from Kyoto to give a lecture and demonstration on the “Way of Tea”, or Chado, at NTU. His visit on 6 December 2001 was organised by the Urasenke Singapore Association and the College of Engineering in conjunction with the teaching of the new General Studies elective “Japanese Culture Through Chado” (GH04).

Highly revered in Japan, Oiemoto Sen Soshitsu is the fifteenth-generation blood descendent of the founder of Chado (Sen Rikyu) and the present Grand Tea Master of the Urasenke School of Tea. For over 40 years, Oiemoto Sen Soshitsu has imparted the spirit of the Way of Tea and its ideals to help others attain genuine peace and happiness.

Speaking through an interpreter, he explained how a gathering of tea drinkers in Japan is the outward manifestation of a distinctly inward sensibility. The universal ideals underlying this Japanese art of living are Wa (Harmony), Kei (Respect), Sei (Purity) and Jaku (Tranquility). “In Chado, we respect everyone and everything without distinction of status or rank,” he said. He went on to add that we should strive to communicate the universal goodness of this Way to all people.

NTU students have been lapping up Japanese culture. In the past seven and a half years, about 10,000 undergraduates studied the Japanese language at NTU – at the introductory, intermediate and advanced levels.

New general elective on Japanese tea culture a hit

“Japanese Culture Through Chado”, held last November and December, was an eye-opener for the 38 who attended it. The unique general elective offered by NTU attracted a whopping 475 applicants. “This course is good for relaxing your mind. You feel thoroughly cleansed after that and also more peaceful. Also, it’s very interesting as a large part of the course is practical,” said Pauline Chua, a second-year computer engineering student. The students studied under a Senior Tea Master from Japan personally endorsed by the Grand Tea Master. The intention is to repeat the popular course in July and November this year.
On 6 December 2001, the Nanyang Auditorium foyer, lined with rows of colourful booths, turned into a bazaar of ideas.

The students from the School of Mechanical and Production Engineering (MPE) had spent the past five weeks translating their ideas into inventions with business viability, as part of their in-house practical training. Several were spotted selling their “wares” to the judges doing their rounds, many of them venture capitalists.

The 80 inventions showcased vied for prizes in five categories – Technovation, Safety and Environment, Design and Automation, Health and Fitness, and Automotive and Transportation. Many of the creations were thoughtfully created to address a real need or to offer convenience and enjoyment to its users.

We spotlight two groups of students among the many talented teams, whose creative energies have produced godsend for two groups of people in need:

**Artificial thumb that works like the real thing**

The National University Hospital (NUH) has expressed interest in this novel low-cost artificial thumb, designed for people missing the digit because of accidents or birth defects. Called MIMIC, the device is a lightweight aluminum digit that moves in tandem with the hand’s forefinger. “Presently, all prosthetic thumbs cannot move and limits the user in finger motion, or are only cosmetic,” said project team leader Adrian Lim. “MIMIC will enable the user to write, pick up small objects and shake hands like a real thumb,” he added. Research for the project took the team to NUH where doctors and prosthetic specialists gave the device the thumbs-up. The students plan to patent MIMIC in the US and hope to collaborate with NUH to test the device on patients.

**Inflatable safety jacket for motorcyclists**

A James Bond movie sparked off the idea, and hey presto, seven MPE students have turned fiction into fact with their creation of an inflatable safety vest for motorcyclists. “Most fatal accidents occur as a result of injuries to the neck, rib cage or spine,” said project leader Ramakrishnan Balasubramanian. The team’s product, InflaSafe, uses remote sensing instead of an unwieldy cord, found in currently available alternatives, to set off an airbag system in the rider’s jacket. On impact or sudden deceleration of the motorcycle, nitrogen gas is released into the jacket at a rate of 200mph, inflating it in the blink of an eye!
“Fighting off” tariffs with homegrown bacteria

A team of researchers from the School of Civil and Environmental Engineering plan to help food processing companies cut costs with biological treatment of industrial food waste

Some 300 food processing companies in Singapore, such as those in the business of packing or canning foods, may soon benefit from a novel system that uses specially-cultivated bacteria to degrade — or break down — industrial food wastewater.

Currently, food wastewater generated by these companies is discharged into public sewers that lead to centralised sewage treatment plants managed by the Ministry of Environment (ENV).

As such wastewater tends to contain high levels of organic pollutants, food processing companies often fail to meet the wastewater quality requirements of ENV. Consequently, many of them pay high tariffs which permit the release of their industrial waste into the public sewage system.

“The aim of our project is to help the food industry avoid paying these tariffs and to help ENV save on investment costs in the long run,” said project team member Asst Prof Show Kuan Yeow. “For cost-effective management, the food wastewater needs to be treated before being discharged into the sewer.”

Since 1999, a research team at the Environmental Engineering Research Centre led by Prof Tay Joo Hwa, the Centre’s Director, has been fine-tuning a biological system of treating industrial food processing effluents using unique strains of microorganisms to disintegrate pollutants present in wastewater.

The team now plans to grow the project, “Biological Treatment of Industrial Food Waste”, from lab-scale to pilot-scale within the next two years, having secured TEC funding of $879,000 — the highest amount ever awarded to a TEC project since the inception of TEC in 2000. A pilot $315,000 effluent treatment plant will be installed in a Jurong Town Corporation food processing factory in Woodlands.

With the backing of the Singapore Productivity and Standards Board and ENV, the NTU team also hopes to extend their unique biotechnology to the rest of the local food industry. The end result? No more high tariffs to contend with!

Unmasking criminals

A trio of researchers from the School of Mechanical and Production Engineering intend to make fingerprint evidence as clear as daylight. What, exactly, do they have up their sleeves?

If all goes according to plan, three years from now, the Criminal Investigation Department (CID) could be using a new fingerprint detection device invented at the School of Mechanical and Production Engineering (MPE) to re-examine old, unsolved criminal cases. The missing link, after all, is often in the fingerprint.

They’ll make fingerprints appear: (From left) Asst Prof Murukeshan, Assoc Prof Seah Leong Keey, Mr Lim Seng Kim (Head of Scene of Crime Unit, Deputy Superintendent of Police) and Assoc Prof Ong Lin Seng
Every consumer dreams of getting high quality products at the right price. Virtual manufacturing can make this a reality. In this case, high performance computing is used to predict possible manufacturing difficulties and “forming defects” like cracks and geometrical inaccuracies at the tool and die design stages to avoid costly tryout manufacturing runs. These cost savings could eventually be passed on to the consumer.

Two research groups – one from Singapore and the other from Canada – are well on their way to making a real success out of virtual manufacturing. Virtual manufacturing is immensely useful as it can be used to assess the mechanical integrity, or toughness, of a product and its ability to satisfy design requirements even before it is created. Leading the Canadian group in this collaboration is Prof Shaker Meguid, Director of the Engineering Mechanics and Design Laboratory at the University of Toronto. The Singapore team is led by Prof Liew Kim Meow, Director of NTU’s Nanyang Centre for Supercomputing and Visualisation, and Dr Lu Chun, Engineering Manager at the Institute for High Performance Computing.

The combined team has to date developed the foundation for a state-of-the-art integrated computer-aided engineering system that incorporates a new technique known as the “variational inequality approach”. This technique earned its creators a gold medal in the prestigious Melosh Finite Element Competition held in the US in 2000. The research, which is expected to conclude before February 2002, is funded by Ontario’s Ministry of Energy, Science and Technology and Singapore’s National Science and Technology Board. In view of its relevance and importance, the initiative also gained the support of Molex Singapore Pte Ltd and Pratt and Whitney Canada, among others.

Unlike conventional print detection techniques, the system proposed by MPE would be able to detect “old” prints with very weak signals. “We could probably capture a fingerprint made 20 years ago,” said Assoc Prof Seah Leong Keey, a project member.

In current police detective work, special powders are applied on surfaces with the suspected fingerprints in order to extract them. Sometimes, other chemicals are also used to help develop the prints, which are often invisible to the naked eye. When the surface is particularly porous or shiny, detection becomes even more difficult, and existing fingerprint detection techniques rarely reveal the prints. Moreover, detection is only as good as the criminal investigator.

“You can’t see the stars in the daytime even though they’re up there in the sky simply because sunlight is much stronger than starlight,” explained Assoc Prof Seah. “Similarly, it’s hard to see the latent fingerprints when there is strong background luminescence.”

Having secured TEC funding of $278,000, the MPE trio is now developing a device that employs a unique “Phase-Resolved Optical Technique” to detect latent fingerprints on various types of surfaces without using powders or chemicals. Assoc Prof Seah elaborated: “Light has different parameters such as intensity, lifetime of luminescence and phase angle. Our technique is based on the phase angle between the two types of light waves from the background and fingerprint.”

Once developed, the device could enable and expedite the detection of latent fingerprints at crime scenes. The digital format of the captured print would also ease the task of fingerprint matching.

The two NTU teams featured here (on left) each received the TEC Innovator Award last year for securing TEC funding. (The Enterprise Challenge, or TEC, is a $10m fund set up to fund innovative proposals that have the potential to add value or to make significant improvements to the delivery of public service in Singapore. It is managed by the PS21 Office of the Prime Minister’s Office, Public Service Division.) In addition, NTU bagged the TEC Innovation Incubator Award for providing its staff with a highly conducive work environment within which to initiate and pursue TEC proposals. NTU President Dr Cham Tao Soon received the award on behalf of NTU.

At the national PS21 ExCEL Convention held last October, the University’s Work Improvement Teams (WITs) also gave a vintage performance, picking up a 3-star, four Golds and seven Silvers.
Scoring an IES record

Assoc Prof Er Meng Joo from the School of Electrical and Electronic Engineering recently added another prestigious award to his résumé.

In recognition of his outstanding research work on multirate control, the Institution of Engineers, Singapore (IES) presented him with the Prestigious Publication (Theory) Award at the 35th IES Annual Dinner and Dance graced by BG (NS) George Yeo, Minister for Trade and Industry, on 17 September 2001.

In 1996, Assoc Prof Er won the IES Prestigious Publication (Application) Award for his novel applications of neural networks.

NIE bags prestigious innovation award

Leading the pack in tropical aeroponics, NIE was one of three that bagged the Innovation of the Year title in the inaugural Singapore Innovation Award, earning this accolade through the achievements of Assoc Prof Lee Sing Kong, Dean of Graduate Programmes and Research, and Assoc Prof He Jie from the Natural Sciences Academic Group.

Organised by the Economic Development Board, the Prime Minister’s Office, the Ministry of Finance and the Singapore Productivity and Standards Board, the Singapore Innovation Award gives national recognition to organisations from the private and public sectors for their exceptional achievements in innovation. The Award also included a second category, the Innovative Organisation of the Year, which saw three winners.

Prime Minister Goh Chok Tong presented the awards to the winners at the Istana on 16 November 2001.

Volunteer to olympism recognised

Assoc Prof Quek Jin Jong, Principal Officer, Director’s Office, NIE, has been awarded the IOC Diploma by the Singapore National Olympic Council (SNOC), a non-government voluntary body affiliated to the International Olympic Committee (IOC). He received the award in recognition of his invaluable contributions to the development of sport and olympism in Singapore.

Assoc Prof Quek was a member of the Selection and Awards Committees of SNOC from 1991 – 2000 and served as the Principal of the Singapore Olympic Academy from 1994 – 2000.

Tangible success for essay competition winner Assoc Prof Park of NBS

Assoc Prof Park Donghyun from the Division of Applied Economics of the Nanyang Business School (NBS) has won the first prize of $8,000 in the Open Category of the 2001 Monetary Authority of Singapore (MAS)-Economic Society of Singapore (ESS) Essay Competition. His paper focused on the theme of “East Asia in the New Economy: Opportunities and Challenges”.

With this recent award, he becomes the first engineer to win two IES Prestigious Publication Awards in both the Theory and Application categories.

Paper on intelligent pole-balancing robot paper contest

They first tasted the fruits of success in March 2001 when their final-year project on the design and development of an intelligent pole-balancing robot earned them the bronze medal in the EEE Technology Competition.

Then, in September 2001, John Tan Chee Chong and Kee Bak Heng, two undergraduates from the School of Electrical and Electronic Engineering (EEE), won top honours in a prestigious student paper contest organised by the Institution of Engineers, Singapore.

Their paper titled “Intelligent Control of a Pole-Balancing Robot” beat 18 entries from NUS, NTU, Singapore Polytechnic and Defense Science Organisation to emerge the winner in the category of Electronics and Computer Engineering.

By 35th IES Annual Dinner and Dance on 17 September 2001.
Think tanks discuss Asian security in the 21st century

The two-day conference on “Asian Security in the 21st Century – Globalisation, Environment and Governance” jointly organised by the Institute of Defence and Strategic Studies (IDSS), Colombo’s Regional Centre for Strategic Studies (RCSS) and Tokyo’s United Nations University (UNU) marked the end of the first phase of the project on “Non-traditional security issues in the region” funded by the Ford Foundation.

Held on 10 and 11 October 2001 at Marina Mandarin Singapore, the conference kicked off with a plenary session about the project undertaken by the regional directors of the different centres, Maj Gen (Retd) Dipankar Banerjee (RCSS), Mr Barry Desker (IDSS) and Prof Ramesh Thakur (UNU). Mr Sidek Saniff, Senior Minister of State for the Environment, delivered the keynote address.

Over the two days, the 60 participants, mainly academics and researchers from Northeast Asia, South Asia and Southeast Asia, presented their findings in three Working Group Meetings covering Environment and Security, Governance and Security, the Impact of Financial Crisis on Socio-Economic Issues, and the Role of Institutions in Inter- and Intra-regional Cooperation. Dr Ali Alatas, a former Minister of Foreign Affairs of Indonesia, was the luncheon speaker on the second day.

Exploring the converging power of the Grid

Grid technology is predicted to bring about the next wave of “killer applications” on the Internet due to its extremely high bandwidth requirements. The term “Grid” covers a wide range of research and development topics – everything from computational grids to e-Science.

The converging power of the Grid was explored at a seminar organised on 24 November 2001 by the Centre for Multimedia and Network Technology, School of Computer Engineering. The seminar attracted a good turnout of vendors, industry practitioners and researchers.

Dr Gunaretnam Rajagopal, the Chairman of Singapore’s recent BioMedical Grid (BMG) initiative, presented Grid developments on home turf with an overview of BMG’s vision and the state-of-the-art Biopolis that will be ready in 2003. The year 2001 was a turning point for Japanese Grid projects as many Grid-related projects received funding from the Government and the industries. Prof Shinji Shimojo of Osaka University gave a summary of these projects and also detailed the BioGrid venture at Osaka University. The second part of the seminar focused on an ongoing Grid project between the Cybermedia Centre at Osaka University and NTU’s School of Computer Engineering.

For more information on the Grid seminar, see http://www.cemnet.ntu.edu.sg.
$50,000 boost for ceramic substrates project

Thanks to an individual donation of $50,000, a project being undertaken at the Advanced Materials Research Centre (AMRC) could soon lead to the birth of a new company.

The collaboration between Mr Soon Kian Leong, Director of Laser Research (S) Pte Ltd and F A Automation (S) Pte Ltd, and the School of Materials Engineering was formalised on 1 October 2001.

Mr Soon’s individual sponsorship of $50,000 will help ensure the continued development of a research project directed by Assoc Prof Peter Hing, Director of AMRC, titled “Investigation on Ceramic Substrates for Data Storage Applications”.

This research, which has good potential for commercialisation, focuses on the development of high-modulus and supersmooth ceramic substrates for advanced disc media applications. Once the project is completed, a company could be set up to exploit the supersmooth ceramic substrates for data storage and other applications.

President hosts thank-you luncheon

On 16 November 2001, NTU President Dr Cham Tao Soon hosted a thank-you lunch for more than 60 NTU supporters, including School and Centre advisory committee members, fund-raisers and NTU staff who had served on the University’s various social committees in the past year. The first such lunch was hosted by the President in 1999.

In the spacious confines of the Nanyang Auditorium Exhibition Hall, Dr Cham mingled freely with his guests during the cocktail reception and later presented each of them with a token of appreciation. A kingly lunch was enjoyed buffet-style.

Dr Cham also took the opportunity to update his guests on the University’s developments in the past year, as evidenced by the rapid emergence of new research niches and the expanded infrastructure of the University. In order to succeed in the 21st century, NTU will continue to operate as an "entrepreneurial university" continually seeking out new and better ways of teaching and doing research, he said.

Promotions

Our heartiest congratulations to our colleagues on their recent promotion:

To Associate Professor
School of Civil & Environmental Engineering: Asst Prof Lee Chi King; School of Electrical & Electronic Engineering: Asst Prof Ma Jianguo, Asst Prof Tan Soon Yim, Asst Prof Patricia Wong Jia Ying, Asst Prof Yeo Kiat Seng, Asst Prof Zhang Yue Ping; School of Mechanical & Production Engineering: Asst Prof Chen I-Ming, Asst Prof John Chai Chee Kiong, Asst Prof Lim Tau Meng, Asst Prof Liu Kuo-Kang, Asst Prof Liu Yong, Asst Prof Low Eicher, Asst Prof Vladimir Vladimirovich Kulish; Nanyang Business School: Asst Prof Charlie Chaoenwong, Asst Prof Grant Allan Taylor, Asst Prof Benjamin Tan Lin Boon; School of Computer Engineering: Asst Prof Amitabha Das, Asst Prof Huang Shell Ying, Asst Prof Li Ling; School of Materials Engineering: Asst Prof Lu Xuehong, Asst Prof Ma Jan, Asst Prof Tan Yong Jun, Asst Prof Yuan Shu
To Vice President (Student Affairs)
Office of Student Affairs: Mr Chong Peng Jek
To Senior Officer (Special Grade)
President’s Office: Mr Teo Soon Hock
To Senior Officer [IT] (Grade 1)
Centre for IT Services: Mrs Chew-Goh Lay Tin
To Senior Officer (Grade 2) or equivalent
Office of Estate & Amenities: Mr Phua Kia Juan; Library: Miss Ng Chay Tuan, Mr Akbar Hakim Bin Haji Harun, Mrs Low-Tan Lay Ching; Centre...
Welcome

The University welcomes the following new staff members:

Nanyang Business School
Asst Prof Fu Ho-Ying
Miss Low An Choo
Prof Murray Chester Kemp
Prof Jack L Knetsch
Dr Linnea Van Dyne
Mr Chung Sang Pok
Miss Tan Ling Ling, Shirley

School of Computer Engineering
Assoc Prof Cham Tat Jen
Mr Woo Wang Keong
Prof Michael J Hynn
Dr Hu Kai
Dr Zhang Liwei
Mr Krishnamoorthy Baskaran
Mr Li Guangya
Mr Md Shamshuzzaman
Mr Rohit Nagarajan
Mdm Song Jie
Miss Suri Nantyal

School of Materials & Environmental Engineering
Asst Prof Lam Yeng Ming
Dr Luo Xiaofeng
Mr Guo Hongbo

School of Civic & Environmental Engineering
Asst Prof Chen Po-Han
Mr Ang Beng Jiunn, James
Prof Chua Lesley England
Prof Miljana N Pavlovic
Prof Tony Melville Ridley
Prof Michael D Kotovsos
Dr Lim Teck Bin, Arthur
Dr Olena Stabnikova
Mr Ding Hongbo
Mr Guo Fenglin
Mr Lim Kian Hong
Mr Liu Baorong @ Liu Baolong
Mr Lu Choon Hau
Mr Mak Chan Long
Miss Qi Yuan
Mr Tan Chuan Boon
Mr Xu Kai
Mr Ye Sudong
Mr Zhang Disong

School of Electrical & Electronic Engineering
Assoc Prof Poo Gee Swee @ Po Se Sui
Asst Prof Ang Lay Kee, Ricky
Asst Prof Olga Sourina
Asst Prof Xiao Gaoxi
Miss Fang Woan Pin
Dr Cheng Yuping

for IT Services: Mr Abdul Rahman Bin Awad, Mr Lee Chang Hsien

To Senior Officer (Grade 3) or equivalent

Office of Academic Services: Miss Tanya Lim Geok Choo; International Relations Office: Mrs Agnes Yap-Kwang Huay Huay; Innovation & Technology Transfer Office: Mdm Fu Dong; Centre for IT Services: Mr Norman Teo Swee Yew

To Senior Officer (Grade 4) or equivalent

Office of Academic Services: Mrs Ma-Lim Ai Choo; Office of Finance: Mrs Ang-Cheong Chai Lian, Mrs Peggy Seah Sou Choon; Office of Human Resources: Miss Margaret Ang Peck Lin; International Relations Office: Mrs Priscilla Lee-Phang Siok Mun; Dean of Admissions’ Office: Mrs Merlynn Low-Chua Poh Suan; Library: Mrs Leong-Lee Kim Lian; School of Communication & Information: Mrs Susan Wong-Lai Pui San; Centre for IT Services: Miss Lee Mui Huang, Mrs Lee-Lee Siew Hong, Mr Low Soo Kiat, Mr Mahmud Bin Ahmad, Mr Ng Chze Yong, Miss Sabrina Bte Mohd Eli, Miss Evelyn Soong Huey Mien, Mr Tan Teck Tim, Miss Yong Meow Leng; Office of Estate & Amenities: Mrs Chua-Tan Chew Luan

To Senior Officer [Lab] (Grade 4)

School of Mechanical & Production Engineering: Mr Lim Eng Cheng

To Hostel Management Officer (Grade 3)

Hostel Section, Student Affairs Office: Mr Ashley Choo Ping, Mr Albert Yu Yeong Jian, Miss Tee Loh Shawn, Mrs Lee-Gan Beo Leng, Mr Leong Weng Kean

School of Mechanical & Production Engineering: Mr Lim Eng Cheng

Staff News

New Appointment
Mr Chong Peng Jek — Vice President (Student Affairs)

Re-appointments
Assoc Prof Simon Yu Ching Man — Principal Staff Officer, President’s Office
Prof Tan Hong Siang — Director of Research
Prof Choo Seok Chew — Director, Graduate Studies
New building for School of Biological Sciences

From July 2002, the vacant hillock between the Nanyang Auditorium and Finger N1 (North Academic Complex) will be a picture of earthworks and piling as the construction of the School of Biological Sciences (SBS) building gets underway.

The SBS Building will be linked to the existing North Academic Complex by a covered bridge, accessible from Car Park A near the Office of Estate and Amenities. Stacked on the existing slope and respectful of the hilly terrain, the new School complex – with room for 60 academic staff – will feature an outdoor plaza with a reflective pool as well as landscaping that visually ties together the Nanyang Auditorium, the SBS building and the North Academic Complex.

In addition to numerous state-of-the-art biology-based laboratories and ancillary facilities, the new complex will be equipped with a small auditorium, and a separate animal housing facility connected to the main building via an underground tunnel. SBS is currently housed in the National Institute of Education.

Visitors

During the period October to December 2001, the University received the following distinguished visitors:

5 Oct Mrs Pauline Tallen, Minister of State for Science and Technology, Nigeria
16 Oct Prof Daryl Le Grew, Vice-Chancellor, University of Canterbury, New Zealand
   Prof Nigel Reeves, Pro Vice-Chancellor, Aston University, UK
5 Nov Prof Roger G H Downer, President & Vice-Chancellor, University of Limerick, Ireland
29 Nov HE Mr Nguyen Minh Triet, Party Secretary, Ho Chi Minh City, Vietnam
30 Nov Dr Soung-Soon Chun, Chairman, The Presidential Advisory Council on Science and Technology, Korea
4 Dec Prof Vicki Rubian Sara, Chief Executive Officer, Australian Research Council, Australia
6 Dec Prof Hajime Okamura, President, Kochi University of Technology, Japan
18 Dec Dr Han Sung Dong, President, Daeduk College, Korea
20 Dec Mr Zhang Baoqing, Vice-Minister for Education, PRC

During this period, the University also received visiting delegations from University of Stellenbosch and University of Pretoria, South Africa; Nanjing University of Science and Technology, PRC; and Tung Chi Ying Memorial Secondary School, Hong Kong.