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Major revamp of accounting and business undergraduate programmes

The challenge: producing graduates who are street-smart, computer savvy and methodical. NTU has taken it upon itself to ensure that its graduates will enter the workforce with these qualities and more. Taking the lead is the Nanyang Business School which is overhauling its curriculum in stages

*"… three key trends have pushed the School to make the wide-ranging changes. They are the advent of the knowledge-based economy where the ability to learn and adapt are the key to success, the increasing use of technology in the business environment, and the globalisation of businesses." - **Prof Neo Boon Siong, Dean of Nanyang Business School***

THE Nanyang Business School (NBS) is revamping its accountancy and business undergraduate programmes to better equip graduates with the intellectual tools to contribute effectively in the new knowledge-based economy. The changes to the Bachelor of Accountancy (BAcc) and Bachelor of Business (BBus) courses include content changes and changes in teaching and evaluation methods. The changes are already being implemented.

In the review process, inputs were obtained from various sources such as the benchmarking and review of accounting and business programmes of the world's top universities and major professional bodies, advice from renowned accounting and business professors, as well as feedback from major employers and past graduates.

Commenting on the curriculum revamp, Mr Michael Lim, Executive Chairman of PriceWaterhouseCoopers Singapore, said: "NTU is moving in the right direction. The stronger focus on strategic management and IT is timely."

NTU students also welcomed the move. Alex Toh, President of the Accountancy and Business Club of NBS, welcomed the introduction of two new core subjects, *Strategic Management* and *Political Economy of East Asia*. He said: "Graduates will obtain a better understanding of the social and political environment of the countries in which their companies operate. We think that the greater weight given to project work is timely. I must say we are excited and pretty envious that this freshmen cohort will be experiencing these changes. All the seniors will have to work harder and smarter to strengthen our skills in these areas." ■

Course content changes

- All BAcc and BBus students have to read **two new subjects: Strategic Management** and **Political Economy of East Asia**
- **Contact hours for the research methods course will be increased** to develop process skills used in identifying business issues, designing studies, and analysing and interpreting findings

Key changes to BAcc degree

Students pursuing the BAcc degree will see an increased focus on:

- Thinking frameworks and tools (as against rules and conventions)
- An understanding of the expanded role of accounting in business and society, such as the role of accounting in capital markets and in business contracts
- Understanding strategy, business processes and risks management
- Producing and evaluating information for decision-making

Key changes to BBus degree

- A new specialisation, **Information Technology**, will equip students with the technical and business competencies for exploiting IT and e-commerce in the new knowledge-based economy
- Two specialisations will undergo substantial curriculum revisions. In **Banking & Finance**, there will be a shift from a focus on rules and conventions to one based on developments in financial theory and modelling. Due to the quantitative nature of leading-edge financial practice, students will have to read courses on mathematics. In **Human Resource Consulting**, students will be trained to take on jobs of headhunters, compensation specialists, and consultants on personnel policy, training, and change management issues. They will be certified to use key personality or psychological tools and will learn negotiation skills, consulting and change management skills, comparative employment law, industrial relations, and compensation and benefits schemes
- The other three specialisations will also see a shift in emphasis. Changes to **Actuarial Science** will tie in with the requirements of the Institute of Actuaries in UK. More conceptual and quantitative skills will be emphasised in **Applied Economics**. In **Marketing**, the focus will be on cross-cultural effects on buyer behaviour, as well as technology effects on marketing, logistics management, and promotions management

For all BBus students, the number of core subjects required for each specialisation has been reduced from 10 to 7 to free up more electives for students to offer subjects in other areas. This is in line with the broadening of education and the need for multidisciplinary skills and knowledge

Pedagogical changes

- More technology-oriented, Internet-based, CD-ROM and computer-assisted learning
- Greater focus on process and experiential learning (e.g. independent search and evaluation of information, more open-ended questions and case studies)
- Greater focus on systems thinking and learning (e.g. business simulations and games that stimulate creativity)
- More emphasis on oral and written communication skills
- Testing and evaluation changes (i.e. more emphasis on continuous learning and project work, more open-book examinations to test analytical thinking and application skills)

City campus opens

The NTU Executive Centre at Orchard Road - continuing education hub for professionals - officially opened its doors on 2 November 1999. It paves the way for a permanent city campus, to be ready in 5 years

NTU President, Dr Cham Tao Soon, unveiling the commemorative plaque

NTU President, Dr Cham Tao Soon, officially opened the new NTU Executive Centre (NEC) on 2 November 1999. The official opening, attended by about 100 invited guests, reflects the University's continuing effort to meet the pressing need for continuing education for professionals. Going where the crowd is, NEC brings some of NTU's postgraduate and executive training programmes to the heart of the Central Business District (CBD). It also paves the way for the establishment of the University's permanent city campus in five years.

NEC, occupying an area of about 7,000 sq ft, has state-of-the-art teaching facilities and equipment which are available to staff from both the Bukit Timah and Yunnan Garden campuses. About 50% of the MBA classes of the Nanyang Business School (NBS) are currently being held at the Centre. Since 1 October 1999, NEC has also been a popular venue for executive training courses organised by the Centre for Continuing Education (CCE) and many other research centres. The MBA and executive training courses have received overwhelming response from working professionals.

"Registration for courses held at the Centre has gone up, and so has attendance. Instructors also say that the students are more punctual, as they don't have to rush all the way to Jurong and get caught in the traffic jams," remarked Prof Neo Boon Siong, Dean of NBS.

At the opening, Dr Cham disclosed the University's application to the Government for a two-ha city campus which will take 5,000 students when completed. It is hoped that the NEC will continue to operate even after the new city campus opens. Until the bigger campus becomes a reality, however, NEC will continue to play an important role in fostering closer interactions between NTU and professionals working in the downtown areas. ■

Heeding the call for life-long learning: *the NTU Executive Centre's convenient downtown location is also a boon for the busy city professional*

Dr Cham (centre) with NEC Management Committee Members: *(from left) Ms Jowe Chu, Prof Neo Boon Siong (Dean, NBS), Assoc Prof Branson Kwok (Chairman) and Assoc Prof Daniel Lwin (Director, CCE). Not in picture: Mr Teo Hak King*

Any enquiries relating to NEC can be directed to Assoc Prof Branson Kwok of NBS (email: abkwok@ntu.edu.sg). The Centre is at 268 Orchard Road, #02-06 to 09; tel: 743 2155; fax: 734 0368.

Changes to key senior appointments

New NTU Deputy President, Prof Cheong Hee Kiat, now joins the ranks of Prof Lim Mong King and Prof Er Meng Hwa. Prof Chen Charng Ning has been appointed Senior Director in the President's Office

New Deputy President

Prof Cheong Hee Kiat, 45, Dean of the School of Civil and Structural Engineering (CSE), assumed the post of Deputy President wef 12 January 2000. He is in charge of the implementation of digital technology at NTU and oversees the Centre for Continuing Education.

Describing his new role, Prof Cheong said: "My immediate task is to look into the integration of services provided by CED, CITS and the Library to achieve more synergistic and efficient operations and more complementary services for our users. This will give us the right setting to digitise our provision of courses and information. Right now, there is some overlap of services."

"As for continuing education, we will work on developing and presenting our courses in a more structured way for staff, alumni and the public. This requires better planning and coordination; courses can be neatly clustered by level, interest and subject matter rather than being conducted on an ad-hoc basis, and timed to reach out better to the public. In the longer term, we should partner closely with our Alumni Clubs and industry to determine training needs. In this way, courses will stay useful and relevant. On-site learning should also become commonplace."

NTU-St Gallen tie-up

First Double Masters Business Programme in Asia

From this July, students on the Master of Business Administration in International Business programme will receive a double degree if they spend their second year at the University of St Gallen in Switzerland

TWO universities from two different continents, with different cultural backgrounds, have pooled their expertise together to offer a double degree – a Master of Business Administration in International Business from NTU and a Master of International Management from the University of St Gallen – to students who complete the two-year full-time programme. The course is open only to NTU students doing the MBA in International Business.

An interdisciplinary course which teaches the best strategies of the East and West, the double Masters programme aims to strengthen the future global manager's skills in the areas of International Management, Management of Technology and Capital Transfers, and International Business Law. Graduates of this programme, possessing both Asian and European perspectives and skills, will be highly sought after by Swiss and German MNCs operating in Asia.

NTU, being a technological university of industry and business, is well positioned to train and develop our future business leaders. The Nanyang MBA, well known for its focus on Asian business and regional and international Business Study Missions, has been consistently ranked among the top MBAs in Asia in the last few years. The University of St Gallen, on its part, has been identified as one of Europe's leading business schools and is ranked among the top three German-speaking universities overall. Numerous leading MNCs and banks regard St Gallen as their preferred recruiting ground.

With over 270 Swiss companies located in Singapore, and more to come, there is an increasing need for business leaders adept at applying cross-cultural strategies. Already, several Swiss and German firms based in Singapore are exploring the option of offering scholarships and jobs to students on this programme to help offset the course fee of $10,500 a year.

"The interactions of students from both universities will provide opportunities to engage in intellectual discussions that hopefully will lead to new and creative ideas. It is my wish that this collaboration between NTU and St Gallen will be expanded to include other prominent universities in Europe," said NTU President, Dr Cham Tao Soon. ■

Not just an Asian perspective *for our MBA students*

East meets West: *(from left) Prof Neo Boon Siong, Dean of Nanyang Business School; Dr Cham Tao Soon, NTU President; Dr Peter Gomez, Rector of University of St Gallen; and Mr Raymond Loretan, Ambassador of Switzerland to the Republic of Singapore, at the MOU-signing*

Prof Cheong Hee Kiat

Prof Cheong has held several important administrative positions since he joined the University in 1986. He was appointed Assistant to the President in 1987, became Sub-Dean of CSE in 1991, and has held Deanship of the School since June 1996. From 1992 - 1996, he was the Director of International Relations. He obtained full Professorship in 1999.

Senior Director in the President's Office

Prof Chen Charng Ning has been appointed Senior Director in the President's Office wef 12 January 2000. He now assists the President by overseeing 4 administrative departments (Estate Office, Development & Planning Office, Office of Professional Attachments and Innovation Centre), and serving as the University's Quality Service Manager whose duties include overseeing the PS21 programmes/activities in the University. This is a part-time appointment and Prof Chen continues to serve as Professor in the School of Civil & Structural Engineering. ■

AT A GLANCE

Roles of 3 NTU Deputy Presidents

Prof Lim Mong King

Responsible for promoting inter-school research and overseeing inter-school research centres and the Singapore-MIT Alliance; promoting inter-university research collaborations; academic audit of the University and the Entrepreneurship Drive.

Prof Er Meng Hwa

Responsible for policy and organisation review to ensure efficient and effective operations and practices in the University.

Prof Cheong Hee Kiat

Responsible for coordinating the operations of the Centre for IT Services, Library and Centre for Educational Development to derive synergy, especially in the area of digital media, and ensuring the use of the latest technology; overseeing the Centre for Continuing Education.

As these appointments are on a part-time basis, Professors Er Meng Hwa and Cheong Hee Kiat continue to hold their Deanship appointment in their respective Schools.

Clean sweep at supercomputing contest

Remarkable. That's the word to describe NTU's super-hot performance in Singapore's premier supercomputing contest, CrayQuest'99, where it bagged the top three of four prizes awarded

NTU hogged the limelight at CrayQuest'99, bagging the top three of four prizes awarded. This annual competition attracted 15 entries and NTU's top three takings amounted to $23,000. The School of Mechanical and Production Engineering (MPE) alone took the Grand Champion and Silver Awards, while the School of Applied Science (SAS) took the Gold. Both MPE and SAS also secured wins in last year's competition.

This annual event was organised by the Institute of High Performance Computing (iHPC) and Silicon Graphics (SGI). It encourages Singapore's best industrial and academic researchers to further enhance their research projects by exploiting high performance computing technologies. This year's grand finale was held on 14 October 1999.

Grand Champion Award ($10,000)

Pulsatile Flow Study of Bi-leaflet Mechanical Heart Valve

This award was given to Assoc Prof Yeo Joon Hock and his team comprising Asst Prof Lim Chu-Sing and research student, Mr Wang Junhong from the Cardiovascular Dynamics Laboratory. Their project is related to the development of a cardiovascular prosthesis, a bi-leaflet mechanical heart valve (BMHV). This valve is different as it has a novel design concept which features a partially protruded ellipsoidal hinge that allows 'positive washing' of the blood that passes through it. It prevents potential stagnation around the hinge region, which causes blood to clot and the valve to malfunction as a result.

The impetus for this project came about

CrayQuest'99 grand champs *(from left) Asst Prof Lim Chu-Sing, Assoc Prof Yeo Joon Hock and Mr Wang Junhong used supercomputers to simulate pulsatile flow through a mechanical heart valve*

owing to the failure of a commercial BMHV in 1994 due to problems with the hinge design. This project has given Singapore the opportunity to break into the high-tech niche cardiovascular engineering industry with a state-of-the art valve design. A US patent for this protruded hinge was issued on 1 June 1999 (US Patent No. 5,908,451).

Gold Award ($8,000)

Meeting Challenges of Container Port Operations in the Next Millennium

Mr Vee Voon Yee (PhD student), Mr Ye Rong (MASc student), Miss Shah Sneha (Honours student) and Assoc Prof Hsu Wen Jing, Director of the Centre for Advanced Information Systems (CAIS), made up the winning team. They developed a simulation model for the use of automated guided vehicles (AGVs) in a fully automated container port, a topic of significance to Singapore's economy.

To achieve a performance highly scalable on multiprocessor computers, the team had to overcome the difficulties with the conventional parallel simulation engines, and develop new locality-preserving load-balancing mechanisms. They then implemented the simulation engine by using leading-edge technologies, including

Using supercomputers in port operations won *(from left) Assoc Prof Hsu Wen Jing, Mr Ye Rong, Mr Vee Voon Yee, and Miss Shah Sneha the Gold Award*

a multi-threaded programming tool developed at MIT called *Cilk*. Their project is believed to be the first in the world to have demonstrated the use of parallel computers in port operations.

Silver Award ($5,000)

Computational Methods for Single and Multi-disciplinary Design Optimisation (MDO) Enterprise

The winners of this award were Assoc Prof Murali Damodaran and his team, Dr Wang Xiaojian and research student LTC Lee Shiang Long from the Centre for Advanced Numerical Engineering Simulations (CANES). Their project is concerned with the integration of the advances made in the development of sophisticated computational methods for analysis of complex engineering systems based on more exact mathematical models such as Computational Fluid Dynamics and Finite Element Methods, numerical optimisation methods and advanced computer architectures for developing single and multi-disciplinary design optimisation (MDO). MDO enables engineers to arrive at optimal design configurations of complex engineering systems in a cost-effective manner and in shorter turn-around times. ■

NIE adopts Mandai Forest

THE wording on the invitation sounded serious: "Adoption of Mandai Forest by the National Institute of Education (NIE)". Many must have read those words with some incredulity. "NIE is adopting an *entire* forest?" Whatever it was that was being adopted on Saturday, 13 November 1999, it almost looked as if it would never happen at all.

Heavy rains that Saturday morning showed no signs of letting up in time for the scheduled 11am launch of the National Parks-NIE collaborative project. By some stroke of luck, however, the torrential downpour became a drizzle, and just before the Guest-of-Honour, Assoc Prof Koo Tsai Kee, Senior Parliamentary Secretary, Ministry of National Development, arrived, the heavens were kind enough to turn off the tap.

During the programme, people finally got an inkling of what the forest "adoption" was all about. NIE, together with the help of eight schools*, will take over the maintenance of two hectares of forest along Mandai Road, not far from the Upper Seletar Reservoir Park. It will be the duty of NIE and its partners to help restore the forest patch – degraded over the years by an invasion of a creeper known as *Smilax* – to a semblance of its former magnificence.

The project aims to use habitat restoration as a means to facilitate hands-on learning of forest ecology and biodiversity; acquaint students, teachers and teacher trainees with field-based learning strategies; and enable students from different schools to collaborate on a project that is both about learning and lending a helping hand towards our natural heritage. ■

* *The eight partners are Corporation Primary, Henry Park Primary, Bukit View Secondary, Naval Base Secondary, Raffles Girls' Secondary, River Valley High, Shibuya-Makuhari Senior High, and the Singapore American School.*

"Build a satellite ground station? No problem!"

The first NTU-JC Challenge has taken off, promising a soaring experience for its young adventurers, who spent their year-end vacation building satellite ground stations, solving tough problems, and developing innovative satellite applications.

TRIGGERING a keen interest in science and technology topics that go beyond the existing school curriculum: this is what the NTU-JC Challenge, a new annual programme organised by the NTU Career Guidance Committee, hopes to do. Difficult problems are posed to challenge JC students to think out of the box, and to encourage them to relate classroom-acquired knowledge to real problems in advanced research topics.

For the inaugural **NTU-JC Challenge 2000** supported by the Ministry of Education (MOE), NTU has invited about 300 students from 14 junior colleges and Jurong Institute to solve some tough problems related to *satellite technology*. The students have to build their own weather satellite terminals at their schools and test their proposed solutions on these terminals, as well as develop novel applications and services related to satellite technology.

Starting with the basics, *Mr Chua Tai Wei from the School of Electrical and Electronic Engineering demonstrates how computer software is used to track satellites. Students have to process image data downloaded from weather satellites*

High excitement: *students learn more about satellite technology from Assoc Prof Tan Soon Hie, Director of the Satellite Engineering Centre (left)*

To prepare the students for the three-month Challenge, a Technical Committee comprising members from different NTU Schools, led by Assoc Prof Tan Soon Hie, Director of NTU's Satellite Engineering Centre, was formed. After the official launch of the first NTU-JC Challenge on Tuesday, 16 November 1999, the Committee conducted a two-day workshop for the students. Workshop topics included satellite orbit model and satellite data manipulation, satellite applications in Global Positioning, and feasibility analyses. Throughout the programme, the Committee provides technical advice to the school teams via email and the Web.

The students' final results and inventions will be presented at the **Grand Finale** of the NTU-JC Challenge on 12 February 2000 at NTU. Three SingTel-sponsored awards of $2,500 each - the *Best Technical, Best Presentation* and *Most Novel Application Awards* - will be given out to the most deserving teams. ■

Online lecturing made easy

Online lecturing needs no expensive and complicated set-up to work. Dr Francis Lee of the School of Applied Science did it by simply plugging into two networks with just a laptop and video camera

ON Wednesday, 22 September 1999, Dr Francis Lee, an Associate Professor from the Division of Computing Systems at the School of Applied Science, gave his usual weekly lecture to his students at NTU. Only for this particular lecture, he was located in the Australian National University in Canberra.

Using the Singapore Advanced Research and Educational Network (SingAREN) and the Asia Pacific Advanced Network (Apan), Dr Lee was able give his lecture using only a laptop and a video camera. This was the first video-conference set up with NTU that did not involve the use of expensive and complicated systems and special facilities, and which did not rely on SingTel's video-conferencing services. The advantage of this system is that it allows greater mobility as the user simply needs to plug a camera into the notebook and dial-up the NTU network from any location, whether in the US, Europe, Japan, Korea, Indonesia, Thailand, or Australia.

Dr Lee, who hopes to conduct more of such "video-lectures" in the future, feels that there is now no reason to cancel lectures because of overseas trips, and he encourages other lecturers to follow suit. "The use of this new technology will make life convenient for lecturers and students, and it is free," he said. ■

Precedent-setting: *with Dr Lee's inexpensive video-conference set-up, missed lectures will become a thing of the past*

Boost for NTU Endowment Fund

Two companies have made generous donations of $100,000 each to support teaching and research activities at NTU

ON 2 August 1999, the School of Civil & Structural Engineering (CSE) received a generous cash donation of $100,000 from **M/s Continental Steel Pte Ltd**, a major local stockholder and supplier of quality structural steel sections and plates. Together with the matching government grant, this donation will be used to set up an endowment fund to be named after the donor. The yearly proceeds from this fund will be used to support a Book Prize, an Award, a Bursary, and a Research Fund to support research activities related to structural steel undertaken by undergraduate students.

***CSE Dean, Prof Cheong Hee Kiat, receiving the cheque** from Mr Tommy Chua, Director, M/s Continental Steel Pte Ltd*

On 13 September 1999, **Infineon Technologies (Asia Pacific) Pte Ltd** donated $100,000 through the NTU Programme Fund to promote R&D at the Centre for High Performance Embedded Systems (CHiPES) in the School of Applied Science (SAS). For every dollar of this programme donation, the Government contributes three dollars to the NTU Endowment Fund. This amounts to a sum of $300,000 for NTU.

Infineon Technologies (formally known as Siemens Semiconductors) is one of the world's leading providers of highly integrated system ICs, memory and high-frequency components, smart card ICs, discrete semiconductors, sensors, and fiber-optic components. The collaboration between Infineon and CHiPES has come about because of the complementary roles that both play in the development of embedded systems.

***R&D boost for CHiPES:** (from left) Mr Robert Hawliczek (CFO of Infineon Technologies), Prof Harcharan Singh (Dean, SAS), and Prof Brian Lee with the donation cheque*

With the Infineon-CHiPES partnership, CHiPES will become the competence centre for all issues relating to embedded systems specification, design, and development. Infineon will in turn benefit by tapping into the innovative research of NTU's faculty and students. ■

All shook up

In October 1999, three NTU dons visited the earthquake-hit region in Taiwan. They survived aftershocks and returned to give their account at a seminar

ON Monday, 25 October 1999, more than 250 participants attended a public seminar organised by the School of Civil & Structural Engineering (CSE) on the earthquake which struck the Chi Chi area in Taiwan on 21 September 1999. The seminar featured the first-hand experiences of a five-member reconnaissance team which visited the earthquake-stricken areas in Taiwan from 17- 23 October 1999. The team was led by Assoc Prof Pan Tso-Chien from CSE. The other team members were Assoc Prof Hao Hong and Asst Prof Li Bing (both from CSE) and two engineers from the Lands and Estate Organisation of the Ministry of Defence.

***Jaded temple:** team members in front of a collapsed temple near the earthquake epicentre at Chi Chi*

During the seminar, the audience was enthralled by the team's account of their personal experiences of some of the earthquakes and aftershocks that swayed buildings and shook the ground. "While waiting in the basement level of the command centre for regional rescue operations, for the commander to meet us, there came a big vertical jerk with a thumping sound – another aftershock of magnitude five nearby. We were really shocked, looking around among ourselves while everyone else there continued their activities as if nothing had happened," recounted Assoc Prof Pan. The visit enabled the team to investigate the extensive damage to the infrastructure in the earthquake region and to get first-hand experience in earthquake research.

***Crumpled heaps everywhere,** such as this collapsed high-rise residential building*

The seminar was such a success that the team has since been invited to give a few more public seminars on the Taiwan earthquake. ■

Launch of Nanofilm Technologies and Nirvana Digital

No stemming the technopreneurial tide

Nothing beats the excitement and rewards of making it in the business world, especially when you have a captive market, thanks to a practical technological invention. Spin-offs from NTU are spinning off at breakneck speed. Recently, two more teams of staff and students from NTU struck it out on their own

Nanofilm's winning formula: ultra-hard, ultra-thin films for the magnetic disk drive industry

A three-man team of academics from NTU recently clinched a multi-million dollar deal with a US$2 billion Japanese multinational company to break into the world market with their local invention - a high-grade diamond-like carbon thin coating for the magnetic disk drive industry. Assoc Prof Shi Xu (lead founder and CEO of the company), Prof Tan Hong Siang and Assoc Prof Tay Beng Kang are also behind NTU's latest spin-off high-technology company - **Nanofilm Technologies International Pte Ltd**, incorporated in May 1999.

Under the terms of an original equipment manufacturing (OEM) agreement, Nanofilm and Shimadzu will make the film deposition machines for disk drive slider head overcoat applications, using Nanofilm's FCVA sources. Shimadzu's estimate of the market size for this one application alone is about US$40 million per year.

The Filtered Cathodic Vacuum Arc (FCVA) source - *an unmatched technology*

Ultra-hard, ultra-useful: *Assoc Prof Shi Xu pointing out the many industrial applications of the diamond-like thin film to Shimadzu Corporation's Mr Mikio Joh and Mr Masato Taniguchi after Nanofilm's launching on 12 November 1999*

From the Microelectronics Centre at the School of Electrical and Electronic Engineering (EEE), they have taken their cutting-edge research, developed over five years, out of the labs to the industry. Their signature technology - Filtered Cathodic Vacuum Arc (FCVA) technology - is an innovative form of diamond-like thin film deposition. The diamond-like film which results is 70% as hard as natural diamond and has superlative qualities unmatched by other films in the market. Extremely versatile, it can be used to coat anything from sunglasses and hard-disk drives and slider heads, to prosthetic hip joints and aircraft components. A portfolio of 10 international patents protects this FCVA technology.

Nirvana's winning formula: groundbreaking motion picture restoration solution

From blotchy reel to picture-perfect. This before-after transformation is light work for School of Applied Science (SAS) lecturer, Assoc Prof Chong Man Nang, and his three ex-students, Dilip Krishnan, Showbhik Kalra and Amey Laud. They hold the secrets of eternal youth for the celluloid world with their invention of a film restoration software, aptly called Revival Digital, which they are marketing worldwide.

Striking out on their own was the way to go ever since research on a final-year motion picture restoration system project took off in 1996, with Prof Chong as mentor to Dilip and Showbhik. That project won them the worldwide Texas Instruments (TI) DSP Best Solution award of a whopping US$100,00 that year. Aware of the potential in their award-winning, revolutionary software, the four-man team decided to take the technopreneurial plunge in October 1999, with the launching of **Nirvana Digital Pte Ltd** - spun off from the Centre for Signal Processing (CSP), where Dilip, Showbhik and Amey worked as research engineers, and SAS. At the helm as CEO is Assoc Prof Chong.

Revival Digital, their first product, is a software that accurately and quickly removes artifacts typically found in old motion pictures, while leaving the rest of the footage untouched. The principal application of Revival is to enhance and restore images as they are transferred from film to videotape for distribution and re-release in other media. American company, da Vinci Systems, Inc is distributing the software worldwide. Revival's fully automatic and low-cost procedure has already garnered the new start-up a deal with Imagica, the largest post-production house in Japan, which is using Revival to restore the famous Ultraman serial. ■

Things are looking bright for Nirvana Digital *and its founders (clockwise from left) Amey, Showbhik, Dilip and Assoc Prof Chong*

Cleaned-up act: *from grainy and streaky to pristine quality is the transformation undergone by this 15-year-old Chinese film*

Colours of 1st January

Myriad. Bright. Luminous. Warm. NTU celebrated the 3rd millennium in a spectacular way, and officially opened its spanking new auditorium to a fantastic fanfare of light, movement and colour - showcasing the millennium mission and synergistic talents of staff, students and alumni

THE campus-wide NTU Millennium Celebration at the Yunnan Garden Campus on 1 January 2000 ignited the usually peaceful Jalan Bahar area with sheer pizzazz. Colourful, themed banners lined the campus roads and adorned campus buildings. At the celebration's centre of gravity – the North Spine – were more splashes of colour; red and white balloons formed an arch welcoming visitors to the 90-stalled *Y2Karnival* at the North Spine Plaza Level. An Open-air Concert at the Pavilion featured music and dance by NTU students.

At 7.25pm, some 450 NTU students, decked out in striking blue, red, yellow and green T-shirts, formed a human chain, and waved glow-in-the-dark cylum sticks to welcome Guest-of-Honour, Dr Tony Tan Keng Yam, Deputy Prime Minister and Minister for Defence, and other VIP guests making their way to the brand new Nanyang Auditorium for the launch ceremony.

In the capacity-filled auditorium, a short video presentation kicked off the evening's programme with aplomb. A concert put up by staff, students and alumni followed the joint launching of the NTU Millennium Celebration and Nanyang Auditorium. Themed *Three Communities in One*, it featured engaging vocal, musical, and dance performances portraying the cultural diversity of the NTU community. The concert was also a celebration of NTU's milestone achievements stemming from the synergistic partnership and talent of its staff, students and alumni.

The 2000 staff and their children, students, alumni and guests thronging the campus on 1 January added unmistakable life and colour to the grandest NTU showcase kicking off this new millennium. ■

Easy does it: *trying her luck at one of the 90 carnival stalls on campus*

Good Luck! *Local talent and guest performer, Tanya Chua, performing her chart-topping number,* Luck*, at the Open-air Concert*

Lion Dance welcome *for our special VIPs at the Auditorium foyer*

Try this! *An NTU student shows off her tempting treat*

Launching the Nanyang Auditorium and NTU Millennium Celebration: *Dr Cham (right) and Education Minister, RAdm Teo Chee Hean (left), help Dr Tony Tan insert a special millennium key into the launch pyramid depicting NTU's vital tripartite force. Organising Chairman, Prof Chen Charng Ning (extreme left), Prof Cheong Hee Kiat (second from right), and Prof Er Meng Hwa (extreme right) look on*

Bringing the house down: *the Concert Grand Finale and confetti shower*

Funky Hip Hop: *fancy moves and nifty footwork from the Modern Jazz Club*

"Singapore is well-placed to benefit from the life sciences revolution. The output of life science companies manufacturing in Singapore is expected to double within the next five years. To realise the potential of the life sciences area, it is timely for NTU to set up a task force to consider how NTU can expand and strengthen its collaboration with SGH and other hospitals in Singapore to build a world-class capability in the life sciences..."

DPM, Dr Tony Tan, issuing the millennium challenge, which sparked off a wave of publicity in the local media. NTU has since risen to the challenge and hopes to get approval from the Government to start up a new-age medical school specialising in the life sciences.

Dr Tony Tan, *giving his opening speech*

Unity in diversity: *a skilful and stimulating juxtaposition of different drumming rhythms*

Balance and concentration *from Chandni Patel, NTU student and Classical Indian dancer*

Vocal powerhouse: *alumnus Mr Keok Leong Seng performing* By the Silvery Moon *with operatic finesse*

Blazing hues: *students from the National Institute of Education bedazzling the audience with a semi-classical traditional Malay dance, Layang Mas*

Classical interlude: *Dr Sylvia Chong, Wong Yih Chyn and Goh Seach Joo performing the beautiful 3rd movement of Mozart's Trio KV498*

Millennium elegance: *Mrs Lu Sinclair, Mrs Lim Chong Yah, Mrs Tony Tan and Mrs Cham Tao Soon, at the reception after the concert*

Exhibits galore: *at the Auditorium foyer, large posters, replicas and homegrown NTU products showcased NTU's significant achievements in business & technopreneurship, environmental & protective technology, microelectronics, communications and media, IT and network technology, and biomedical engineering*

Other NTU Millennium Celebration Activities:

NTU symposium *NTU and Technology in the Next Millennium* (6 January), Millennium Lecture Series (ongoing), Y2K Challenge Run (22 January), Mini-Asian Film Festival *Asian images, Asian voices* (28-30 January). For details, visit the NTU Millennium Celebration website: http://www.ntu.edu.sg/millennium/

Your fingerprint is now your password

ON 4 October 1999, NTU's Centre for Signal Processing (CSP) and Singapore Technologies Electronics (ST Elect) signed an R&D agreement for the development of a compact, fast, accurate, and affordable fingerprint identification device. The device, based on a patent-pending technology named FingerID, is a CSP-developed omni-directional fingerprint identification technology.

"What's revolutionary about the FingerID algorithm is that it is multi-directional and recognises even partial fingerprints without core or delta points of the fingers, or both," said CSP programme manager Dr Yau Wei Yun. The FingerID biometrics access control technology has more template sizes than what is currently available and uses only 300 – 500 bytes of memory space to store each print, thus ensuring accuracy and speed of identification.

Unlike other companies which port their technologies from optical sensors, CSP developed its technology primarily for solid-state sensors which became available about 2 years ago. FingerID is unique as it can automatically change the sensor setting to suit different skin conditions, and is able to match fingerprints regardless of finger positioning. Moreover, its solid-state sensor can differentiate *live-and-well* fingers from *dead* ones. Hence, the latter will not fool the system.

ST Elect plans to integrate the new device into Securnet V3.0, which is its latest Integrated Security Management System. Both

Rotation invariant fingerprint verification *online system*

CSP and ST Elect expect the first product prototype to be available in nine months, while the commercialised version is expected to be ready by the year 2001. "We are looking at exploring the use of fingerprint recognition in the areas of access control and e-commerce," said ST Elect product development and management division manager, Mr Eric Chan. "We may even see the use of fingerprint recognition as an alternative to encryption for Internet purchases." ■

Instant, accurate tracking

NTU is involved in the development of a new multi-base Global Positioning System, which when completed, will make light work of position determination in large-scale land surveys and engineering work

THE School of Civil & Structural Engineering (CSE) at NTU is collaborating with the University of New South Wales, Australia, and the Survey Department of Singapore to develop a multi-base Global Positioning System (GPS) in Singapore to prototype real-time high precision solutions. GPS is a system of satellites, control stations, and receivers that uses radio signals to transmit data to track positions.

High precision positioning in both the post-processed and real-time mode is now increasingly used for many surveying and navigation applications on land, at sea, and in the air. Such high precision positioning techniques are the result of progressive R&D innovations. According to CSE's Assoc Prof Goh Pong Chai, the principal investigator of this project, one of the most innovative applications of this multiple base station network is making the task of position determination for surveyors and engineers as easy as possible.

The advantages of the multi-base station approach include overcoming the short baseline constraint for present off-the-shelf commercial RTK ("real-time-kinematic") systems; improving the speed for ambiguity resolution (AR), thus allowing instantaneous on-the-fly AR; providing real-time differential correction access to multiple users concurrently; and improving the relative accuracy using either dual-frequency or single-frequency GPS rover receivers.

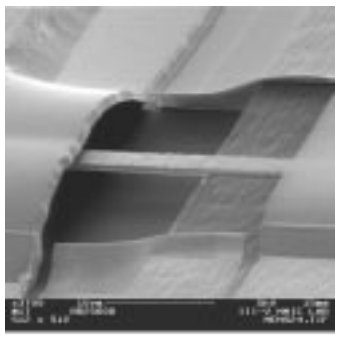
High precision tracking: *NTU researchers with the state-of-the-art GPS device*

As part of the project, four GPS base stations will be set up, one of which is in NTU. The GPS base stations are receivers used to collect raw data from satellites.

This joint project is expected to change the way measurements are made in engineering work and large-scale land surveys in Singapore. The end result will place Singapore at the forefront of high precision GPS research. A GPS/GIS Showcase to display the preliminary results of the collaborative project was held on 19 and 20 November 1999 at NTU. ■

MEMS research takes off

Imagine microchips which can sense, think, act, and communicate besides performing the traditional role of computation. No, such chips are not science fiction but actually exist today, made possible by MEMS technology. In fact, NTU is involved in precisely this 'science reality'



Preliminary demonstration of III-V compound semiconductor MEMS structures *fabricated using NTU's III-V Clean Room facilities*

MEMS (MicroElectro Mechanical Systems) is a technology in which actuators, optical devices, micropumps, valves and various chemical and physical sensors can be monolithically integrated with transistors to create smart, integrated microsystems. Precursors of these microsystems include ink-jet printer modules, air-bag-release modules for automobiles, and digital micro-mirrors for projection displays.

Intensive research and development is currently underway worldwide to develop even more sophisticated and advanced microsystems. It is foreseeable that these integrated microsystems will penetrate many aspects of our lives. Their impact over the next 30 years will be as profound as that of Integrated Circuits (ICs) over the last 30 years.

Recognising the enormous potential in MEMS, the National Science and Technology Board (NSTB) of Singapore recently initiated a National Strategic Research Programme on MEMS technology. The primary goal: to develop a competitive MEMS industry in Singapore. In April 1999, a Call for Proposals was sent out to research institutes and universities in Singapore. After rigorous evaluation by the International MEMS Expert Committee, a handful of outstanding projects was selected from the 31 projects submitted. Two of them were submitted by the School of Electrical and Electronic Engineering (EEE).

The first project, **MEMSAIT**, which stands for *MEMS for Automatic Identification and Tracking* aims to develop a high performance, small, low-cost, long-range, and low power consumption "Single-Chip" electronic tag for automatic identification and tracking applications. This will be superior to current low frequency range implementations (such as the ERP) as it is designed to operate beyond the 30GHz range, thus exploiting the advantages of the microwave/ millimetre-wave regime. This project, which exploits the advantages of III-V MMIC and MEMS technology, is a joint effort by the Global Positioning Systems Centre and the III-V MMIC (Monolithic Microwave Integrated Circuit) team in the Microelectronics Centre.

The other approved project, **Photonic MEMS for Optical Networking**, was put up by the Photonics Research Group and the Network Technology Research Centre (NTRC). In this project, the team moves away from the conventional silicon-based platform to using microactuators on III-V semiconductors. Leveraging on the recently initiated optical networking research programme in NTU, together with NTRC and Telecommunication Authority of Singapore (TAS), this project will facilitate the development of photonic integrated circuits and components with photonic MEMS elements for optical networking. Such technology will enable the creation of low-cost devices to allow for the introduction of the optical fibre to the home, bringing about very high bandwidth network access to the customer. ■

Smart sensing

Engineering designs have often mimicked nature in form and shape, just like aircraft structures, which take on the shape of birds in flight. So too it is with smart structures, which can sense and respond to their surroundings like human beings

Rotation invariant fingerprint verification *online system*

WHILE it may be a long time yet before structures and machines can completely mimic human beings, what is being explored now at NTU is the *Structural Health Monitoring System* which uses fibre optic sensors as both sensor and carrier of information to the central processing unit (the brain). Like nerves in the human body, these sensors can quickly "sense" the location and severity of faults inside structures.

The Structural Health Monitoring System works in two stages. The first stage provides a global warning system by giving the overall health status of the structure (this is akin to checking the temperature of someone who might appear feverish). The second stage is the diagnosis of the problem. Specific testing is done with quantitative values analysed so that the problem can be identified in terms of location, severity, and size. The information yielded provides conclusive evidence for remedial action. Although this second stage may take a longer time than the first and requires evaluation by an expert in the field, it is envisaged that the whole process can be completed without significant downtime.

This monitoring system is the product of a collaborative effort between the Schools of Mechanical and Production Engineering (MPE), Civil and Structural Engineering (CSE), and Electrical and Electronic Engineering (EEE). On-site monitoring of metal and concrete bridges as well as composite material structures is currently being carried out. It is hoped that this technology will be commercially used in buildings in 2 – 3 years' time. ■

A week in titillating Tuscany

A unique experience for 4 MPE students specialising in Engineering Design was the participation in a week-long international design workshop held in a fortified medieval monastery in Tuscany, Italy

"So shiok!" *Singapore's multi-ethnic spread of Chinese, Malay and Indian food delighted western tastebuds on Singapore Evening (left to right: Le Lian, Asst Prof Chui, Rege, Chandra and Faizal)*

IMAGINE meeting in a medieval monastery in the rolling hills of Tuscany, having lectures in the stables there, and enjoying discussions in the lush verdant gardens and surrounding fields. Four lucky students from the School of Mechanical and Production Engineering (MPE) got to experience this and more at the annual Industrial Design Education Meeting (IDEM) held from 19 – 26 September 1999.

IDEM is a summer gathering which takes place each year at a different location. The theme for this year's workshop was "Nature/Artificial". Singapore's first-ever delegation to IDEM consisted of fourth year Engineering Design students See Le Lian, Muhamad Faizal bin Yusmal, Vendasalam Chandramohan, and Rege Abhijit Suresh, led by Asst Prof Chui Yoon Ping. Joining them were participants from design programmes in Norway, Sweden, Finland, Germany, Holland, Belgium, Italy, Slovenia, Israel, Brazil, and Australia. The workshop was conducted in English.

IDEM began in 1985 with a meeting of students and faculty members from three neighbouring European schools of design – Genk in Belgium, Eindhoven in Holland, and Essen in Germany. Over the years, more schools and countries have joined in. The invitation to Singapore to attend this year's meeting was arranged by Mr Avram Grant, a visiting Senior Fellow at MPE.

The venue was Sant' Anna in Camprena, a fortified medieval monastery in the rolling hills of Tuscany. First erected as a church in the 12th century and later expanded as a monastery, it boasts 16th century Frescos (wall paintings applied to wet plaster). Its modern-day claim to fame is being the location where *The English Patient* was filmed.

Our four MPE students plunged into this unique experience with enthusiasm. It will be a credit to them and to Asst Prof Chui when the invitation arrives for next year's IDEM! ■

Entering the exciting world of R&D

NTU hosted the 5th National Undergraduate Research Opportunities Programme Congress (NUROP Congress) on 11 September 1999. The NUROP Congress brought together more than 450 participants from NTU and NUS (National University of Singapore) with audiences from the four local polytechnics and junior colleges.

NUROP is now well instituted in both NTU and NUS, and attracts some of their best undergraduates. In this programme, able undergraduates in the engineering and science faculties collaborate directly with faculty members in research. Their first-hand experience runs the gamut from proposal writing and developing research plans to resource support, conducting the research, analysing data, and presenting the results orally in a proceedings paper. In short, the NUROP adds substantial value to a university education. Similar such programmes are found in several world-class tertiary institutions.

Tough but exciting call *for this participant presenting her paper*

NTU and NUS alternatively host the Congress annually. Last year's NUROP Congress saw the largest number of papers since its inception and included six plenary papers, five parallel sessions and over 50 posters. The congress proceedings were also for the first time compiled in compact discs (CDs) which can be borrowed at the NTU, NUS and National libraries. The abstracts of all the papers compiled in the proceedings were also placed on the Internet. Both the NUROP and Congress are sponsored by the National Science and Technology Board (NSTB). ■

NTU Deputy President, Prof Lim Mong King, *telling participants to take up the challenge of R&D work*

High-growth photonics exposition

MORE than 250 papers from 28 countries in Asia, Australia, Europe, and North America, were presented at the International Symposium on Photonics and Applications (ISPA '99), held on 29 November – 3 December 1999, at the Shangri-La Hotel. The symposium was jointly organised by SPIE-The International Society for Optical Engineering and the School of Electrical and Electronic Engineering (EEE).

The five-day programme for ISPA '99 included a workshop on optical thin-film coating technology and four parallel conferences on design, fabrication, and characterisation of photonic devices; advanced photonic sensors and applications; photonic systems and applications in defence and manufacturing; and photonics technology in the 21st century.

The four plenary speakers were Dr Arpad A Bergh, President, Optoelectronics Industry Development Association (OIDA), USA; Prof Dennis G. Deppe, University of Texas at Austin, USA; Prof Dr Stephan W Koch, Philipps University, Marburg, Germany; and Dr A Sivathanu Pillai, Chief Controller, R&D, Defence Research and Development Organisation, India.

ISPA '99 is the first international symposium on photonics technology and applications jointly organised by SPIE and NTU. Owing to its success, an MOU was signed between the two organisations for long-term collaboration on biennial international symposia on photonics and microelectronics technologies. The photonics series (*International Symposium on Photonics and Applications*) will be held in odd-numbered years while the microelectronics series (*International Symposium on Microelectronics and Assembly*) will be held in even-numbered years.

The Symposium Chairs were Dr Ananth Dodabalapur (Lucent Technologies/Bell Labs, USA) and Assoc Prof Kam Chan Hin (EEE). Assoc Prof Tam Siu Chung and Assoc Prof Lim Tuan Kay (both from EEE) led the local organising committee. ■

Paving the way for future symposia: *Prof Er Meng Hwa (Dean, EEE) and Dr P Rai-Choudhury (Technical Director, SPIE) sealing the NTU-SPIE collaboration*

Singapore to be education hub for optics and photonics

Singapore's plan to become a centre of excellence for education and training in optics and photonics was revealed at the **Forum on Education and Training in Optics and Photonics**, held as part of ISPA'99, on 2 December 1999. Assoc Prof Lim Tuan Kay, a senior member of the Photonics Research Group at EEE, and Founding Chair of the Singapore chapter of SPIE, proposed incorporating photonics into the high school science curricula, as well as university courses that require the application of photonics technology. A National Alliance for Photonics Education and Training (NAPET) and Centre for Education and Training in Optics and Photonics (CETOP) could be set up to further these efforts. The forum was organised by the Singapore Chapter of SPIE, the School of EEE, the Singapore Productivity and Standards Board (PSB), and the Chinese High School.

Start them young, *says Assoc Prof Lim*

NTU hosts region's first International Conference on Language Testing, Evaluation & Assessment

FROM 25 - 27 November 1999, some 160 English Language experts from more than 12 countries gathered at NTU for a key international conference on language testing, evaluation & assessment (Language TEA) - the first of its kind to be hosted in the region.

Prof Harcharan Singh, Dean, School of Applied Science (SAS), opened the conference, which was jointly organised by SAS and the Singapore Tertiary English Teachers Society (STETS), in cooperation with the International Association of Teachers of English as a Foreign Language (IATEFL)'s Testing, Evaluation and Assessment Special Interest Group (SIG).

The conference, held at LT 7, aimed to promote discussion among planners, practitioners and theorists involved in testing, evaluation and assessment in language education. Two keynote speakers – Mr Keith Morrow, Consultant to the University of Cambridge Local Examinations Syndicate, and Dr Kari Smith, Coordinator of IATEFL TEA SIG – along with 32 other academic leaders presented papers on topics like IT and Language Testing, New and Alternative Assessments in EL, and Creativity Assessment.

Assoc Prof Khong Chooi Peng, Chairperson of the Conference Organising Committee, points out the significance of the conference, also the first-ever Asian IATEFL event: "The advent of technology has opened new possibilities that will impinge or enhance tests in terms of validity and reliability. Increasingly too, the question of whether language tests do more than test language, whether they encourage or assess creative thinking, has become relevant in the move towards nurturing thinking in schools." ■

Reorient language assessment as social fact... *test the ability of people to use language as social beings in a social context, says Mr Keith Morrow*

Shah Family honour for two

ON 23 September 1999, Prof Haresh Shah, Obayashi Professor of Engineering from the Department of Civil Engineering, Stanford University, presented the Shah Family Award/Prize for academic year 1998-99 to Mr Luke Lim and Mr Shashidaran s/o Kaneson. The Shah Family Award/Prize, set up in 1996 through the generous donation of Prof Shah, aims to cultivate entrepreneurship among students in the School of Civil & Structural Engineering (CSE). The Award ($2,000) is for deserving final year students while the Prize ($1,500) is for deserving second and third year students. Luke has already started his own T-shirt printing company while Shashidaran intends to set up a floorball shop. From 1996 till now, there have been 6 Shah Family Award recipients and 12 Shah Family Prize recipients. ■

Budding entrepreneurs, *Luke (second from right) and Shashidaran (second from left) with Prof Cheong Hee Kiat, Dean of CSE (right), Prof Shah (middle), and Assoc Prof Chiew Yee Meng, Sub-Dean of CSE (left)*

DSP technologies for the new millennium

IN conjunction with Techmonth '99, the Centre for Signal Processing (CSP) organised an Open House from 22 – 23 September 1999 to showcase its R&D achievements to the industry and public. The event highlighted the vital role that digital signal processing (DSP) will play in the advancement of science and technology. Of the 12 interesting projects displayed, three received special attention; their breakthrough technologies - *Acoustic Noise Reduction (ANR)*, *Speech Enhancement*, and *MPEG4* technologies - were featured in various major media like FM 93.8, Radio Singapore International, TCS 5 & 8, Channel News Asia, The Straits Times, Lianhe Zaobao, and PC World Magazine. Assoc Prof Ser Wee, Director of CSP, notes that these projects have very good commercialisation prospects. CSP will certainly strive to bring their technologies to companies who want to market them regionally and globally. ■

Exchange student tops international competition

FAISAL Karmali from the University of Waterloo, Canada, took top spot in the 1999 Annual IEEE Engineering in Medicine and Biology Society (EMBS) Student Design Competition. His winning work was carried out in 1998 at the Biomedical Engineering Research Centre (BMERC) under the supervision of Assoc Prof S M Krishnan, Director of BMERC, while he was an exchange student at NTU. The award, sponsored by the Whitaker Foundation through the EMBS, is for outstanding undergraduate student achievements in the field of Biomedical Engineering Design. Karmali received his prize at the 21st Annual International EMBS Conference held jointly with BMES in Atlanta, USA, last October. His winning design report is titled *Data Fusion and Analysis of Multimodal Cardiovascular and Respiratory System Signals for Clinical Diagnosis*. ■

APPOINTMENTS

THE President of NTU has made the following appointments/re-appointments:

Prof Choo Seok Cheow, *Director, Graduate Studies*
Asst Prof Lim Ee Peng, *Principal Staff Officer, President's Office*
Assoc Prof Daniel Tan Tiong Hok, *Director, Centre for Educational Development*
Mrs Peggy Poo, *Deputy Director, Centre for Educational Development*
Assoc Prof Chan Chiu Ming, *Head, Division of Chinese Language and Culture, School of Arts*
Prof John Stuart Howard, *Head, Division of Visual and Performing Arts, School of Arts*
Assoc Prof Rita Skuja-Steele, *Head, Division of English Language and Applied Linguistics, School of Arts*
Assoc Prof Joy Chew Oon Ai, *Head, Division of Policy and Management Studies, School of Education*

CONGRATULATIONS

PROF Leo Tan Wee Hin, Dean of the School of Science, received the honorary title *Fellow of The Singapore Institute of Biology* on 23 November 1999, at an Awards Ceremony officiated by Dr John Chen, Minister of State for National Development. The Fellowship was conferred in recognition of his many years of responsible work in biological research, and in the teaching, application and promotion of biology in Singapore.

NTU collaborates with UPM

NTU recently signed two Memoranda of Understanding - one on general academic co-operation and the other on student exchange - with the Universiti Putra Malaysia (UPM). The signing ceremony was held at UPM on 20 July 1999. The areas of co-operation identified between the two universities include the promotion of student exchange; the promotion of faculty and staff exchange; joint research activities; joint conferences, workshops and seminars; and the exchange of information such as library materials and research publications. ■

Wanted: Nanyang Fellows

CHINA. Indonesia. Japan. Korea. Laos. Malaysia. Malawi. Mexico. Myanmar. Pakistan. Peru. The Philippines. Singapore. South Africa. Thailand. Vietnam.

The Nanyang Fellows programme *is a top-of-its-class MBA programme*

No, it's not a roster of the United Nations. But it does reflect some of the same spirit. These are the countries represented in the first and second class of the Nanyang Fellows programme which is a fast-paced 12-month MBA that begins here in Singapore – the Boston of the East, and ends in Boston, Massachusetts with six weeks at the Sloan School at MIT.

The Fellows are top mid-career executives, some on scholarship, some sponsored by their companies, some self-financed, but all driven by a desire to grow and recharge their careers. "We want… people with a desire to make a difference, to promote understanding of their countries and take home a better understanding of the other cultures they come into contact with," says the programme Director, Dr John Webster.

Recruiting for the class of 2000/2001 has begun. So, if there is someone you admire who is looking for an exceptional MBA experience, or who has the head and the heart to be a leader in the workplace and in the community: tell him or her about the Nanyang Fellows programme. We'll be happy to talk to them. ■

They can call, fax or e-mail The Director, Nanyang Fellows Programme (tel: 790 4722/6413; fax: 791 8522; email: fellows@ntu.edu.sg)

WELCOME

THE University welcomes the following new staff members:

Nanyang Business School
Assoc Prof Tan Teng Kee - Associate Professor
Assoc Prof Toh Thian Ser - Associate Professor
Asst Prof Grant Allan Taylor - Assistant Professor
Asst Prof Lee Chay Hoon - Assistant Professor
Mr Chua Eng Huang, Cecil - Senior Tutor
Mr Lim Kui Suen, Lewis - Senior Tutor
Prof Oum Tae Hoon - Albert Winsemius Professor
Prof Kuldeep Kumar - Visiting Professor
Prof Ng Kheng Lian, Lilian - Visiting Professor
Mr Lim Tan San - Teaching Fellow
Dr Sampath Dhamodaran - Research Fellow
Dr Yang Baochen - Research Fellow
Miss Shirley Koh Bee Lian - Research Associate
Mr Thong Tiong Yang - Research Associate
Miss Tan Ai Geok, Lindsay - Senior Administrative Officer

School of Applied Science
Dr Bertil Schmidt - Research Fellow
Dr Ma Lizhuang - Research Fellow
Mr Pendyala Prabhakar Rao - Research Associate
Mr Qiang Wei - Project Officer

School of Communication Studies
Asst Prof Shyamsunder Rewachand Tekwani - Assistant Professor

School of Civil & Structural Engineering
Dr Chris Rizos - Senior Fellow
Dr Budi Wibawa - Research Fellow
Dr Chen Xiaoming - Research Fellow
Dr Chen Xingwei - Research Fellow
Dr Kusnowidjaja Megawati - Research Fellow
Dr Shi Xudong - Research Fellow
Dr Vanissorn Vimonsatit - Research Fellow
Dr Yang Chao - Research Fellow
Mr Gao Fei - Project Officer
Mr Ilias Tsaparas - Project Officer
Mr Lee Kim Woon, Michael - Project Officer
Mdm Liu Ying - Project Officer
Mr Rezaur Rahman Bhuiyan - Project Officer
Mr Zhao Pengjun - Project Officer

School of Electrical & Electronic Engineering
Asst Prof Charoensak Charayaphan - Assistant Professor
Asst Prof Kantisara Pita - Assistant Professor
Asst Prof Philip Dowd - Assistant Professor
Asst Prof Yuan Xiaocong - Assistant Professor
Dr Bruce F McGuffin - Senior Fellow
Dr Cheng Yuhang - Research Fellow
Dr Chen Zhihao - Research Fellow
Dr Feng Gang - Research Fellow
Dr Jagdish Chandra Patra - Research Fellow
Dr Li Na - Research Fellow
Dr Louis Shue - Research Fellow
Dr Lu Xugang - Research Fellow
Dr Stanislav Averine - Research Fellow
Dr Sun Xiaoming - Research Fellow
Dr Vladimir Koudriachov - Research Fellow
Dr Wang Dusheng - Research Fellow
Dr Wu Jianqing - Research Fellow
Dr Xia Yan - Research Fellow
Dr Xie Wenfang - Research Fellow
Dr Ye Cang - Research Fellow
Dr Zhang Chuanli - Research Fellow
Dr Zhang Xiao - Research Fellow
Dr Zhou Xiang - Research Fellow
Dr Fu Youjun - Post Doctoral Fellow
Mr Hou Rui - Research Engineer
Mdm Ong Joo Yee - Research Engineer
Mr Sumarno Chandra, Hie - Research Engineer
Mr Chung Kit Chen, George - Research Associate
Mr Gu Jianhui - Research Associate
Mr Liu Jian - Research Associate
Mr Suranthiran Sugathevan - Research Associate
Mr Swe Toe Naing - Research Associate
Mdm Xiang Qing - Research Associate
Mdm Ruan Fang - Project Officer
Mr Sim Chee Wee - Project Officer
Mr Subrata Halder - Project Officer
Mdm Yang Xin - Project Officer
Mr Zhu Jingyi - Project Officer

School of Mechanical & Production Engineering
Prof Martin Erik Gustav Helander - Professor
Assoc Prof Li Lin - Associate Professor
Asst Prof David Lee Butler - Assistant Professor
Asst Prof Franck Alexis Chollet - Assistant Professor
Asst Prof Jiao Jianxin, Roger - Assistant Professor
Asst Prof Vladimir Vladimirovich Kulish - Assistant Professor
Asst Prof Wang Xiaolin - Assistant Professor
Prof Randall M German - Nanyang Professor
Prof Dai Fulong - Visiting Professor
Dr Appuswamy Devasenapathi - Research Fellow
Dr Du Xinyu - Research Fellow
Dr He Liming - Research Fellow
Dr Jian Xiaoming - Research Fellow
Dr Liu Hongzeng - Research Fellow
Dr Liu Qiang - Research Fellow
Dr Liu Yanju - Research Fellow
Dr Tan Hong - Research Fellow
Dr Yan Xinggang - Research Fellow
Mr Deng Yimin - Research Associate
Mr Dong Weiguo - Research Associate
Mr Guo Yinchao - Research Associate
Mr Krishnakumar Venkateswaran - Research Associate
Mr Krishnan Venkatakrishnan - Research Associate
Mr Li Hui - Research Associate
Mdm Li Ying - Research Associate
Mr Zhu Guoliang - Research Associate
Mr Chua Hu Chuan - Project Officer
Mr Wu Ruoyun - Project Officer
Mr Zhai Lianyin - Project Officer

School of Arts
Prof Tang Yuming - Professorial Fellow
Asst Prof Rahil Bte Ismail - Assistant Professor
Dr Hsia Shau Man, Sophie - Senior Fellow
Mr S Jegathesan - Teaching Fellow
Mr Zhang Jun - Teaching Associate
Mr Hu Guangwei - Teaching Associate
Miss Soo Soo Eng - Trainer
Mr Mohd Pitchay Gani B M A Aziz - Trainer

School of Science
Assoc Prof Douglas R M Edge - Associate Professor
Assoc Prof Moo Siew Pheng - Associate Professor
Mr Patel Kadamb Haribhai - Research Associate

Registrar's Office
Miss Poh Hak Hoon - Administrative Officer

Centre for IT Services
Mr Low Soo Kiat - Analyst Programmer
Miss Soong Huey Mien, Evelyn - Analyst Programmer

Centre for Educational Development
Mr Lee Chye Seng - Senior Systems Administrator

Internal Audit Office
Miss Mow Yee Hun - Assistant Director

Centre for Chinese Language & Culture
Mr Zhou Changji - Research Fellow

Innovation Centre
Mr Lee Heng Weng - Assistant Director

Network Technology Research Centre
Miss Chong Joo Hin - Research Associate
Mr Zhu Lin - System Administrator
Mr Shen Gangxiang - Project Officer

Centre for IT in Education
Miss Cheong Eleen - Educational Media Officer
Miss Seow Chow Loon - Administrative Officer

Computer Services Centre, NIE
Miss Chellappah Rebecca Ranjini - Analyst Programmer

Personnel & General Affairs Division
Mrs Tong-Ng Poh Cheun - Administrative Officer

PROMOTIONS

CONGRATULATIONS to the following staff on their recent promotion:

To Full Professor
Assoc Prof Soh Chee Kiong, *School of Civil & Structural Engineering*
Assoc Prof Khong Yuen Foong, *Institute of Defence & Strategic Studies*

To Associate Professor
Asst Prof Chan Syin, *School of Applied Science*
Dr Gobinda Gopal Chowdhury, *School of Applied Science*
Asst Prof Hu Xiao, *School of Applied Science*
Asst Prof Kwoh Chee Keong, *School of Applied Science*
Asst Prof Annamalai Benjamin Premkumar, *School of Applied Science*
Asst Prof Wong Kok Cheong, *School of Applied Science*
Asst Prof Lam Soi Hoi, *School of Civil & Structural Engineering*
Asst Prof Law Wing-Keung, Adrian, *School of Civil & Structural Engineering*
Dr Wong Yiik Diew, *School of Civil & Structural Engineering*
Asst Prof Lee Chun Wah, *School of Communication Studies*
Asst Prof Cai Wenjian, *School of Electrical & Electronic Engineering*
Asst Prof Chan Pak Kwong, *School of Electrical & Electronic Engineering*
Asst Prof Hui Ping, *School of Electrical & Electronic Engineering*
Asst Prof Li Gang, *School of Electrical & Electronic Engineering*
Asst Prof Li Ziqing, *School of Electrical & Electronic Engineering*
Asst Prof Ling Keck Voon, *School of Electrical & Electronic Engineering*
Asst Prof Low Kay Soon, *School of Electrical & Electronic Engineering*
Dr Ng Boon Poh, *School of Electrical & Electronic Engineering*
Asst Prof K Radhakrishnan, *School of Electrical & Electronic Engineering*
Asst Prof Mohammed Yakoob Siyal, *School of Electrical & Electronic Engineering*
Dr Song Qing, *School of Electrical & Electronic Engineering*
Asst Prof Tan Cher Ming, *School of Electrical & Electronic Engineering*
Dr Tan Hee Beng Kuan, *School of Electrical & Electronic Engineering*
Asst Prof Tseng King Jet, *School of Electrical & Electronic Engineering*
Asst Prof Wong Kin Shun, Terence, *School of Electrical & Electronic Engineering*
Dr Zhou Xing, *School of Electrical & Electronic Engineering*
Asst Prof Chou Siaw Meng, *School of Mechanical & Production Engineering*
Asst Prof Xiao Zhongmin, *School of Mechanical & Production Engineering*
Dr Yeung Wai Hung, William, *School of Mechanical & Production Engineering*
Asst Prof Zhou Wei, *School of Mechanical & Production Engineering*
Asst Prof Chen Shaoxiang, *Nanyang Business School (SAB)*
Asst Prof Chen Yee Fong, Geraldine, *Nanyang Business School (SAB)*
Asst Prof Park Donghyun, *Nanyang Business School (SAB)*
Asst Prof Liu Ming Hua, *Nanyang Business School (SAB)*
Asst Prof Ramin Cooper Maysami, *Nanyang Business School (SAB)*
Asst Prof Shahidur Rahman, *Nanyang Business School (SAB)*
Asst Prof Tan Kai Guan, Clement, *Nanyang Business School (SAB)*
Asst Prof Tan Lay Hong, *Nanyang Business School (SAB)*
Dr Tan Mui Siang, Patricia, *Nanyang Business School (SAB)*
Asst Prof Teo Cheng Chuah, Jack, *Nanyang Business School (SAB)*
Asst Prof Wu Yuan, *Nanyang Business School (SAB)*
Asst Prof Yeo Chuan Seng, Victor, *Nanyang Business School (SAB)*
Asst Prof Goh Chor Boon, *School of Arts*
Asst Prof Vilma Ann D'Rozario, *School of Education*
Dr Teo-Koh Sock Miang, *School of Physical Education*
Dr Helen Wright, *School of Physical Education*
Asst Prof Koh Thiam Seng, *School of Science*
Asst Prof Cheah Horn Mun, *School of Science*
Asst Prof Teo Beng Chong, *School of Science*
Asst Prof He Jie, *School of Science*
Dr Xu Shuyan, *School of Science*

To Senior Assistant Registrar
Mrs Lim-Lim Paik Suan, *Registrar's Office*

To Senior Assistant Director
Miss Low Fui Lan, Mabel, *Development & Estate Division, NIE*

To Assistant Bursar
Mrs Ang-Lim Yew Wah, *Bursar's Office*
Miss Chiew Yan Leng, *Bursar's Office*

To Assistant Director
Mrs Chang-Tan Wey Ling, *Director's Office, NIE*

To Assistant Librarian I
Ms Ong Kok Fong, Wendy, *Library*
Mrs Tan-Chin Mien Chew, *Library*
Miss Teng Soek Leng, *Library*

To Senior Systems Analyst
Mr Chua Boon Chai, *Centre for IT Services*
Mr Goh Chiang Chey, *Centre for IT Services*
Mr Tan Chin Thong, *Centre for IT Services*
Mr Chin Ching Puang, *Computer Services Centre, NIE*
Mr Lim Lye Kheng, *Computer Services Centre, NIE*

To Systems Analyst
Mr Goh Cheng Chye, *Centre for IT Services*
Miss Koh Sze Ling, *Centre for IT Services*
Mrs Tan-Lim Ming Hing, *Centre for IT Services*
Mr Teo Piang Nien, Gary, *Centre for IT Services*
Mr Teo Swee Yew, Norman, *Centre for IT Services*

To Principal Technical Officer
Mr Cheang Kum Seng, *Centre for IT in Education*

Birth of a renaissance centre

Presenting NTU's latest pride and joy - the 1,800-seat Nanyang Auditorium

Architectural masterpiece: *Nanyang Auditorium*

LOCATED between the North and South Spines, NTU's spanking new $35 million Auditorium, with its unique sweeping curved roof resembling a mortarboard, is a stunning sight on campus. Its futuristic silver-blue façade and sleek structure expresses a contemporary dynamism that is symbolic of NTU's aspirations for the new millennium.

The auditorium interior, which features wood-veneered acoustic panelling and an acoustic ceiling, is equally impressive. The two-tier 1,800-seat auditorium also houses a fly tower, a multi-purpose hall for examinations and exhibitions, robing rooms, and an 18m-high foyer for holding large crowds prior to functions and concerts.

August 2000 will witness the first convocation ever to be held at the Nanyang Auditorium – a truly proud moment for NTU. The auditorium also presents an ideal venue for other ceremonies, cultural activities, concerts and public lectures. "The auditorium is set to add much vibrancy to campus life," commented Prof Chen Charng Ning, Senior Director in the President's Office.

The Nanyang Auditorium indeed promises to be NTU's mini-renaissance place, from which expressions of harmony and balance, technical competence, and rich artistic imagination interweave and flow. It will no doubt excite both the intellectual and aesthetic minds of many for years to come.

NTU's latest pride and joy featured prominently in NTU's millennium celebration bash on 1 January 2000, when it was officially opened by Deputy Prime Minister and Minister for Defence, Dr Tony Tan Keng Yam. *(See also pages 8-9)*

Spacious interior: *the auditorium foyer, dressed up for the NTU Millennium Celebrations*

Technological slant: *the reflective glass façade and modern curves reflect the technological thrust of the University*

Visitors

DURING the period October to December 1999, the University received the following distinguished visitors:

8 Oct	Prof Sir Brian Fender, Chief Executive Officer, Higher Education Funding Council for England (HEFCE), UK
23 Oct	Prof Tan Zhongyin, Vice-President, Liaoning Teachers' University, China
25 Oct	Prof V N Rajasekharan Pillai, Vice-Chancellor, Mahatma Gandhi University, India
2 Nov	Mr Alejandro Gonzalez Alcocer, Governor of the State of Baja California, Mexico
19 Nov	Prof Liu Zhongsu, President, Jilin University, PRC
30 Nov	Dr Alice Lam, Chairman, University Grants Committee, Hong Kong
13 Dec	Prof Qian Peide, President, Suzhou University, PRC
15 Dec	Dr Jiang Shuxia, Vice-Mayor, Xiamen, PRC

During this period, the University also received visiting delegations from Aquinas University, the Philippines, Multimedia University, Malaysia, Kochi University, Japan, the University of West Indies, Jamaica, Rajabhat Institute Chiang Rai, Thailand, and Instituto Tecnologico y de Estudios Superiores de Monterrey, Mexico.

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