S’pore teams bag top 3 prizes for innovation

The students from NTU and NUS beat teams from the Asia-Pacific region.

BY SHARON DE CASTRO

SINGAPORE teams have swept the top three prizes in the Young Inventors Awards 2004, which recognises research and innovation among tertiary students in the Asia-Pacific.

The winning teams, which can comprise just one person, come from Nanyang Technological University and the National University of Singapore. They take home cash and equipment for themselves and their university.

Five other teams made up mostly of Singaporeans from the two universities were among the 12 finalists. The rest were from Australia, the Philippines and India.

Four of the five members in the top three are from China, indicating that universities here attract some of the region’s best brains.

One of them was Mr Wang Qijie, 25, who is completing his doctorate at NTU’s School of Electrical and Electronic Engineering. He won the top award for his work on increasing fibre-optic capacity.

Three others, Mr Liang Xiaojun, 25, Mr Zhang Xuming, 32, and Miss Sun Yi, 22, who are from the same school, took the bronze. All are part-time students doing their doctorate.

The sole Singaporean among them is 25-year-old Randall Law, who worked on his winning project while studying electrical engineering at NUS. He won the silver award.

The head of NUS’ Department of Electrical & Computer Engineering, Professor Yeo Swee Ping, said it is coincidental the other winners are from China. About half the graduate students at both NTU and NUS are from overseas.

An NTU spokesman said most Singaporeans tend to go abroad to do their postgraduate degree.

Mr Law said his competition project — packing more data on a disk drive — started out as his final-year project. His experience has convinced him to pursue a career in research.

His supervisor, Dr Hong Ming Hui, said: “Randall is a top student. His project was very challenging and he persisted with it even when he didn’t make any progress in the first six months. It indicates he has all the characteristics of a good researcher.”

The winning teams for the 2004 award, organised by the Asian Wall Street Journal and Hewlett-Packard, were picked from a shortlist of 12. A total of 87 teams from well-known universities in the Asia-Pacific entered.

The finalists’ research focused on biomedical science, cancer, computer science and telemedicine topics.

An international panel of seven judges selected the finalists and winners.

Singapore-based budding scientists shine

FIRST PRIZE

Cheaper and more efficient optical networks in future

THE project that won Mr Wang Qijie, 25, the top prize focused on finding a better way to build optical interlayers, which increase the capacity of optical networks.

Optical networks work by using light to carry digital data. A single strand of optical fibre as thin as a hair can carry a million phone calls simultaneously or transmit data equivalent to the entire Encyclopaedia Britannica in a few seconds.

Existing interlayers are expensive, contain several components and have a weak signal strength, leading to noisy phone calls and slower Internet connections.

Mr Wang thought that using optical fibres to make interlayers would make them cheaper and more effective.

In August 2003, after 18 painstaking months, Mr Wang successfully built the world’s first fully functional all-fibre three-port interlayer.

While he is waiting for a patent for his product, Mr Wang is working to perfect his invention.

SECOND PRIZE

More data on disk drives, thanks to his work

NATIONAL University of Singapore undergrad Randall Law cracked his final-year project — inventing an ultra-fast laser device that can make lines as tiny as 20 nanometres or one-fifth the width of a strand of hair.

The silver-award winner said the challenge came from his supervisors, Dr Hong Ming Hui and Ms Wang Weijie. Dr Hong gave 25-year-old Mr Law an unusually difficult final-year project for his electrical engineering degree. Find out how to reduce the size of the magnetic elements that hold data on disk drives to 100 nanometres, which would allow the disk to hold twice as much data as is currently possible.

Only allowed to use existing equipment in the lab, Mr Law settled on a technique known as laser lithography, which uses a laser to draw patterns onto a light-sensitive film known as photosensitivity.

Two months before graduation, he made the breakthrough: Producing lines as small as 20 nanometres — much smaller than the 100-nanometer target set by his supervisors.

THIRD PRIZE

A chip that spots even the odd cancer cell

THREE friends, all doctoral students at Nanyang Technological University’s School of Electrical and Electronic Engineering, were asked by their supervisor to find an alternative way of diagnosing cancer cells by making use of cell physics.

And the solution had to be inexpensive and convenient to use. (Above, from left) Mr Liang Xiaojun, 25, Miss Sun Yi, 22, and Mr Zhang Xuming, 32, decided on using refraction, as light bends more when it passes through cancerous cells.

The biomedical chip they eventually developed assesses cells one at a time, ensuring that even the odd cancer cell is spotted, and works with a single drop of blood.

Results are available within an hour.

Mr Zhang of the project: “We worked on it 11 hours a day, seven days a week for 1 ½ years. There’s now three companies that are very interested in it.”