

NTU, SUTD set up joint 3-D printing lab



SUTD Assistant Professor Chen Lujie with his models, made using large-scale prototyping, at the SUTD-MIT International Design Centre. ST PHOTO: DESMOND LIM

Collaboration will allow users to leverage on both schools' strengths

By AMELIA TENG

TWO universities are joining forces for the first time to explore new technologies in 3-D design and printing, a field that is emerging in Singapore.

Nanyang Technological University (NTU) and the Singapore University of Technology and Design (SUTD) said yesterday that they have set up a joint lab to drive research in the field of 3-D printing.

The joint lab – called the Visualisation and Prototyping Lab – consists of existing facilities, such as 3-D printing equipment, on their campuses.

For a start, four PhD students – two from each school – will undertake research projects in the lab, having access to both schools' facilities and two supervisors, one from each school.

A total of \$1 million has been pumped in by both institutions to fund the students' projects and their four-year scholarships.

The lab will allow users to leverage on both schools' strengths.

"NTU has a history in rapid

prototyping, 3-D printing and material science, and SUTD's part is research from a design perspective," said Professor Kristin Wood, SUTD's head of "pillar" or faculty for engineering product development. "Rather than competing, we're taking skills from both sides to create new technologies."

Prof Wood and Professor Chua Chee Kai, chair of mechanical and aerospace engineering at NTU, will oversee the joint efforts.

The collaboration was announced on the same day as the official opening of the SUTD-MIT International Design Centre.

The 208 sq m centre at SUTD's Dover campus is for faculty and students to do research and showcase their work. When the school moves to Changi in 2015, it will span 5,000 sq m over four floors.

Some 60 faculty members and 53 researchers from SUTD are involved in projects at the centre. There are 78 ongoing projects, 16 of which are collaborations with the Massachusetts Institute of Technology (MIT), SUTD's partner university in the US.

To carry out these projects, SUTD has obtained external funding of \$12 million from industry partners and agencies.

One such project by SUTD Assistant Professor Chen Lujie is a software for prototyping, in which a scale model is produced to test a product concept.

The software is able to "break" any object down into components, which can then be printed out, laser-cut and easily assembled without complicated tools to create prototypes of different sizes. In future, this technology could be applied to the construction of buildings, especially those that take on a more complicated design, he said.

He is also working on a project with MIT Professor Larry Sass, who researches building houses directly from computer models.

ateng@sph.com.sg

Transformers not just child's play for robotics researcher

TRANSFORMERS may be the stuff of childhood fantasies for many. But they are more than just child's play for Professor Mohan Rajesh Elara.

The characters in the cartoon and movie series, which can take on different forms like vehicles and robots, inspired him in his research in robotics.

The lecturer from the Singapore University of Technology and Design (SUTD) is currently trying to invent a unique kind of wheelchair, which he calls a "leg-chair".

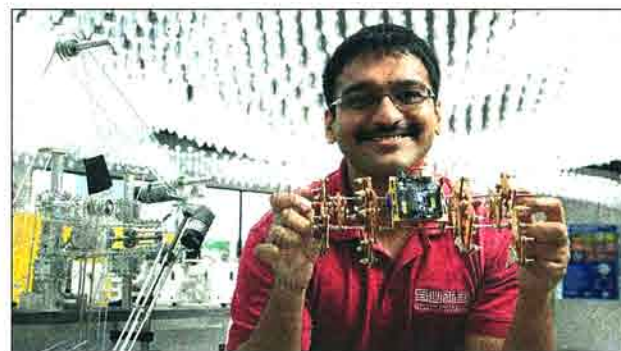
The movement of the four "legs" on each side, attached to

a wheel, mimics animals' behaviour, helping it to adapt to uneven terrain, like staircases.

For instance, the "legs" can walk on the ground, as humans, bears and monkeys do.

They can also avoid obstacles on the ground by lifting their legs higher, just like how spiders move.

"It's a system that reproduces the strength of animal movement patterns," said Prof Mohan, who is working on the project with Dr Daniela Rus, an electrical engineering and computer science professor from the



Prof Mohan with a small prototype of his "leg-chair", a wheelchair with legs that, perhaps, can tackle uneven terrain like stairs. ST PHOTO: DESMOND LIM

Massachusetts Institute of Technology.

Prof Mohan hopes to build a life-size prototype in the next two to three months.

In another project, he is trying to assemble robots which can take on various shapes, and combine with other robots to perform new tasks.

Said student Lum Shi En, 28, one of 12 helping in Prof Mohan's projects: "A few hundred of these robots can assemble and maybe perform tasks like rescue operations in the future."

AMELIA TENG