

SHORT NEWS SCIENCE

Games project

The EWI hall buzzed with visitors, competitors and games last Friday. At the presentation of the Games Project, some 50 bachelor students presented the seven games they had been working on since last February. The jury, headed by a TU alumnus now working at Vanguard, awarded the first prize to Hexacon, a game in which players compete for tiles on a sphere. The Penguin award for the 'most glorious failure' went to the Cosmania team, who bit off a bit more than they could chew, but "they made a courageous attempt at the genre," commented Dr Rafael Bidarra. (Image: Games Project)

graphics.tudelft.nl/~mkt4/2011



Smart grid

Large-scale use of renewable energy will lead to continuously changing amounts of energy on the electricity network. How the so-called 'smart grids', the intelligent electricity networks of the future, will deal with these challenges is the topic under discussion during the International Conference on Power Systems Transients, held at TU Delft from June 14-17. The event is organized by Dr Marjan Popov and Professor Lou van der Sluis of the Electrical Engineering, Mathematics and Computer Science faculty.

Antimatter

Researchers at Cern have succeeded in trapping antimatter atoms for over 16 minutes. They reported this accomplishment in the June 6th online edition of the journal Nature Physics. Sixteen minutes is long enough to begin to study their properties in detail. Ultimately the researchers want to find out why nature seems to have a preference for matter. The universe seems to be made entirely of matter, yet at the time of the Big Bang, matter and antimatter would have existed in equal quantities.

Fuel Cells

The new Solid Oxide Fuel Cell laboratory at the process and energy department (Mechanical, Maritime and Materials Engineering) is the setting for a SOFC symposium, organised by TU and KiviNiria, on 23 June. Speakers from the Netherlands and abroad will give presentations on efficient power production (by SOFC's) in the near future. The symposium's coordinator is Dr Aravind.

pe.tudelft.nl/~sofcpowergen2011/home.htm

(Designing a) digital dietitian



Kim Thy Nguyen with a prototype of the dietician App. (Photo: Tomas van Dijk)

A healthy diet is especially important for couples wishing to become parents. Kim Thy Nguyen (MSc) designed a webtool to help prospective parents improve their eating patterns.

Medical doctor and epidemiologist, Professor Dr Regine Steegers-Theunissen, of Erasmus Medical Centre, has been actively promoting healthy food patterns and lifestyles for parents-to-be. Healthy diets and lifestyles and successful pregnancies are not related like cause and effect, but the associations are strong. In 2007, Steegers-Theunissen started a preconception

clinic, called 'Achieving a healthy pregnancy', to help make couples aware of their diet and lifestyle as preparation for their future pregnancies. But she wished to further support and guide couples - yes, also the men - about food and drink issues before and during pregnancy.

The programme provides feedback on the items and issues health tips

Kim Thy Nguyen (MSc) took up the gauntlet for her MSc thesis at the faculty of Industrial Design and Engineering. She was to make a website annex app for the target group tailored to nutrition and lifestyle improvement. Nguyen made use of her two

years of psychology studies at Erasmus University. She knew that behavioural change is a difficult thing to achieve and that James Prochaska had written a 'transtheoretical model' about this in which he argued that behavioural change - like quitting smoking - develops in five or six steps. Only when people have arrived at a certain level, do they become sensitive to health information.

Nguyen developed a website prototype which provides interested couples with information about healthy nutrition. The couples are asked to keep score of the items they eat and drink. The programme then provides feedback on the quantities and items and also issues health tips ('try a less fat cheese instead'). A fellow-student from the Haagse Hogeschool, Joyce Boer, wrote the diet tips and recipes. An overview page shows the participant and his/her doctor what parts of the diet are on target (green check mark) or not quite there yet (red cross).

The prototype on www.slimmerzwanger.nl is Nguyen's 'masterpiece'. Programmers will now have to develop it into a web service that interested couples can login to. Nguyen hopes the application will ultimately be developed for smart phones, bringing 'E-healthcare' up close and personal. (JW)

Kim Thy Nguyen, 'Slimmer zwanger', MSc thesis, 10 June 2011, supervisors Prof. Richard Goossens and Prof. Dr. Regine Steegers-Theunissen

COVER



"The lower right part of the photo shows a cellar where the drinking water is filtered through layers of sand. The rest is a reflection in the cellar window, showing daylight through the window behind the photographer. Bart Benschop, a friend of mine, took the picture. On the back cover, printed in relief, is a microscope photo of bacteria that played an important role in my research. We discovered that gallionella bacteria were responsible for oxidising iron in the sand filters. Previously we thought of the filters as a dead and purely chemical system. We discovered that bacteria extract phosphates from the passing water to

the extent that we need to add phosphates to feed other bacteria that are essential for the purification process. TU alumnus, Esther Teunissen, who specialised in graphic design after her study at IDE, designed the cover. I especially like the letters she used. The letter type is called Jokerman. It's frivolous and mocking, which suits me fine. Some think the letters look like bacteria, which is apt as well."

Weren de Vet, 'Biological drinking water treatment of anaerobic groundwater in trickling filters', 14 June 2011, PhD supervisors Professor Mark van Loosdrecht (AS) and Professor Luuk Rietveld (CEGS)

HALFWAY

Silent planes

Name: Chongxin Yuan (27)
Nationality: Chinese
Supervisor: Professor Adriaan Beukers (Composites section of the faculty of Aerospace Engineering)
Subject: Mechanical and acoustic properties of composites sandwich
Thesis defense: In one and a half years

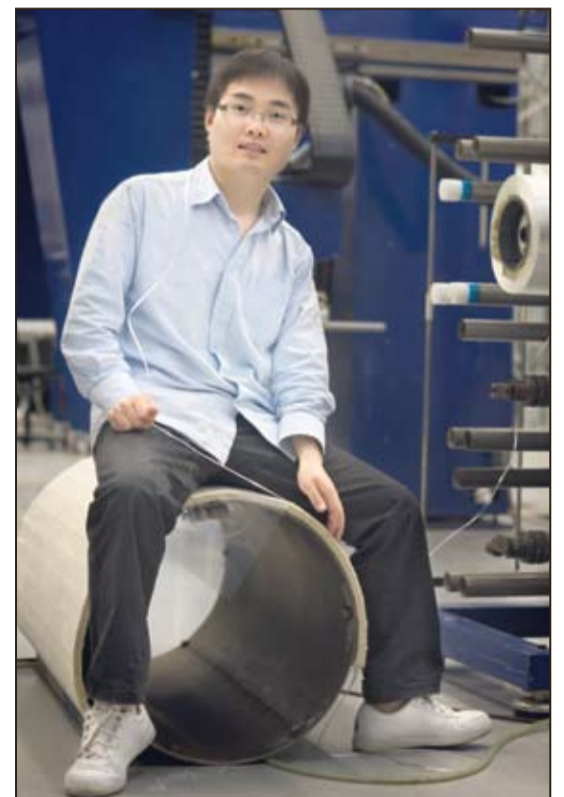
"Nowadays, the fuselage of an airplane is built and the acoustic properties of the structure are improved afterwards by adding layers of foam on the inside of the fuselage. However, one can also pay attention to the acoustics in an earlier stage. The material I work on is a composite sandwich made of glass fibre and a plastic honeycomb structure. It has very good acoustic and insulating properties. With this material, manufacturers should be able to build lighter aircrafts and reduce labour costs, since the insulation blankets no longer need to be added. Ultimately I want to improve the material in such a way that - besides being cheaper and lighter - the airplanes made of it will also be more comfortable. But (laughing) I'm not sure that this goal is also feasible.

I'm improving the acoustic properties by experimenting with the orientation of the fibres and the type of plastic. I want the material to absorb another 10 to 20 decibel. I perform my experiments with a cylinder made of the composite sandwich. Speakers placed around the cylinder produce noise, and with a microphone on the inside, I measure the propagation through the structure.

The damping properties of the material differ for different frequencies, and it's still a bit problematic for frequencies between 1000 and 3000 Hertz. I want to narrow that bandwidth.

I also want to conduct these experiments with a composite sandwich featuring carbon. Acoustically, glass fibre is better, but the mechanical properties of carbon are greater. Maybe I can combine the two.

Sometimes the research is funny, like the time when I built a numerical model. The results were in agreement with the results from the experiment, but my most happy time will be my thesis defence. I'm looking forward to working outside of the university setting. My dream is to have my own factory specialising in building materials. I'm working on a material for airplanes now, but this material can also be used for buildings. I couldn't start a factory for airplanes, because of the scale - such a factory would need to be very big. I want to open the factory in China, because I have support there. Here I don't have a network." (TvD)



Chongxin Yuan sitting on the mould of the cylinder with which he performs acoustic experiments. (Photo: Tomas van Dijk)