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From Baie de Somme to Taipei

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FROM BAIE DE SOMME TO TAIPEI

Recently, I attended two conferences in the field of mechanisms and robotics. Their nature was virtually opposite. The first one was the French National Robotics Research Days, held in beautiful, remotely located Baie de Somme. This meeting was all in French, except my talk that opened the first day. Luckily I had picked up some technical French from patents. The second was the IFToMM World Congress that is held every four years, on alternating continents, this time in a four-million-people Taiwanese metropolis, Taipei. Both have their charms, and both are important in their own right.

AUTHOR'S NOTE

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JUST HERDER

Retreat

The French Robotics days (Journées Nationales de la Recherche en Robotique, JNRR) are notorious for their remote locations, which are plentiful in France. The 2015 edition was held in the historical building of the Cap Hornu conference centre in the Baie de Somme area (Figure 1). Of course this selection of a remote location is done intentionally, to stimulate discussion and cross-fertilisation. This is reflected in the programme, which consists of invited talks, not on latest results per se but mainly allowing

1 A location that stimulates discussion and cross-fertilisation: the shore of Baie de Somme, breathtaking nature but not always the best weather.

2 Body support system based on non-linear spring mechanisms as a step towards shell-based mechanisms. (Courtesy of Laevo)
(a) Rendering.
(b) Application.

presenters to share their vision with the visitors – this time 180, including 40 students.

I presented some ideas on compliant robotics, a niche area between conventional rigid-link robots and the emerging field of soft robotics, in which we aim to create mechanisms based on compliance, i.e. distributed motion, in combination with distributed actuation and sensing. Ideally, this leads to what may be called mechatronic materials,



integrating mechanism, actuator and sensor, as well as multiple functionalities in one part.

As a development example toward this goal I presented a shell-based body support for workers and care givers (Figure 2). Other presentations included an approach to increase precision in a multi-DoF manipulator (DoF = degree of freedom) by locking – after careful trajectory planning – certain DoFs once close to the target position, thereby reducing backlash considerably. Physical interaction between industrial robots and humans was also discussed, a topic that still bears many challenges. Also less immediate topics, such as robotic techniques in choreography, and robotic cartography in unstructured environments were treated. In line with the meeting objectives, several round table discussions were held and professionally directed to tangible results.

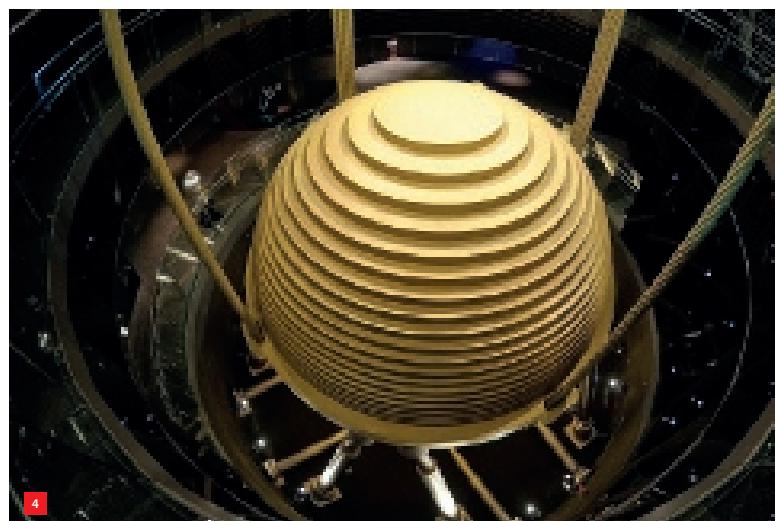
Exposure

In Taipei, the official language was English, and it was a good event for those collecting different accents and pronunciations, as the International Federation for the Promotion of Mechanism and Machine Science (IFToMM) that organised the event aims to unite the mechanical sciences world in a way similar to the United Nations. Professor Yoshihiko Nakamura, president of IFToMM, joked that his organisation is probably the smallest professional society on Earth, with only 47 members. The thing is, these members are countries or territories.

The Netherlands are also a member, which implies that every Dutch citizen can enjoy the benefits of IFToMM events, such as discounts, travel grants, and financial support in conference organisation. A range of technical committees, such as Robotics and Mechatronics, Tribology, Vibrations, organised part of this World Congress, while they also organise their own conferences, such as the European Conference on Mechanism Science (EUCOMES).

I mainly visited the Computational Kinematics and Linkages, and Controls sessions, and was pleased to learn during the revolving-disk gala dinner that my student Teun Jelle Lassche received the Best Application Paper Award for a collaborative work between the University of Twente and Prof. G.K. Ananthasuresh of the Indian Institute of Science, Bengaluru.

With the General Assembly (Figure 3), various committee meetings, a presentation at a symposium organised by Dr. Chin-Hsing Kuo of Taiwan Tech, an editorial board meeting of the IFToMM journal Mechanism and Machine Theory, and meeting up with many conference friends, I had little opportunity to enjoy the city. Yet a visit to Taipei 101, the



3 The General Assembly of the IFToMM that was held during the conference with all the flags of the member organisations. The insert shows Dr Volkert van der Wijk, currently at King's College, London, placing a vote on behalf of the Netherlands.

4 The 660-tonne counter mass in Taipei 101 in its cable suspension and hydraulic actuation system with parallel kinematic architecture. (Photo courtesy Armand du Plessis / Wikimedia Commons)

building that does not seem to end was deemed essential. And indeed, with a super smooth elevator, an impressive counter mass (Figure 4) against frequent earthquakes and typhoons, and a magnificent view over the hilly outskirts, it made a nice topping on a well-organised event, hosting around 750 delegates from all over the world. ■

INFORMATION

JNRR-15.SCIENCESCONF.ORG
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