

## News Release

Munich, Dec. 14, 2010

### **2.6 million euros for the European research project "CustomPacker" Handling holiday shipping peaks through robot-human cooperation**

**Scientists from the Technische Universität München, together with partners from academia and industry, will investigate in a European research project how robots can help workers to pack large TV sets. The target is to help workers in this difficult task, and at the same time to reduce packing costs to allow European companies to stay internationally competitive.**

Just before Christmas, electronic goods producers experience an activity peak, so that luxurious flat-screen TVs, notebooks, and tablet PCs can be delivered on time. The packaging, however, is time-consuming, due to the many variants of such goods. When the item to be shipped is a home entertainment system with a 1-meter diagonal monitor, it is a hard task even for workers who are already assisted by robots. Once the worker prepares a shipping carton, he must lean into it to place a protective foam layer at the bottom to protect the fragile and expensive screen. Then the worker must step back to a safe distance so that the robot can set the 30-kilogram TV into the carton. Then the worker puts in the right speakers, remote controls, cables, and manuals. This step is followed by the worker installing an extra foam layer before closing the carton.

The dilemma: It is hard for the worker to lean deep into the box, but at the same time a traditional robot cannot face this task alone due to the limited number of large and expensive TV sets produced daily. Completely automated solutions for many variants could be too expensive, and the worker brings skill and flexibility to the job.

TU München (TUM) scientists are therefore planning, together with European partners from industry and academia, the next generation of helping robots for the packaging station. The robots must not only learn to work in a flexible way with many product variants, but also to be sensible to their environment, so that human-robot cooperation becomes safer. This is the specialty of the TUM scientists. In the Munich-based Cluster of Excellence CoTeSys they already are developing the

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foundations for better communication between humans and machines, for example in the "Cognitive Factory," where humans and robots cooperate on an assembly line.

The objective of the CustomPacker project is to free the worker from another hard packing task while winning time, through a closer yet still safe cooperation between the human and the robot. The TV will be packed more quickly with a cooperative task: To the robot go the actions that require lifting power, to the worker the adaptive and flexible manipulation of lighter parts. Faster packing of TV sets and other electronic goods could in the future be less of a burden to workers.

The CustomPacker consortium is composed of seven European partners, from Spain (Tekniker), Finland (VTT), Austria (Profactor, Ferrobotics) and Bavaria, Germany (Loewe, MRK Systeme, and TUM). The TUM has the leading role and commits two chairs, namely Human-Machine Communication (MMK) and the Institute for Machine Tools and Industrial Management (*iwb*). The project is supported within the 7<sup>th</sup> European Framework Programme for research and development for three years with up to 2.6 million euros, with the aim of contributing to European competitiveness.

## The Cluster of Excellence CoTeSys

CustomPacker ("Highly Customizable and Flexible Packaging Station for mid to upper sized Electronic Consumer Goods using Industrial Robots") is a Satellite Project from the Cluster of Excellence CoTeSys (Cognition for Technical Systems). The Cluster of Excellence, coordinated by the TUM, is a close collaboration among scientists from various disciplines connecting neuro-cognitive and neuro-biological foundations to engineering sciences at leading research institutions in Munich: besides Technische Universität München, scientists from Ludwig-Maximilians-Universität München, Universität der Bundeswehr, Max-Planck Institute of Neurobiology, and German Aerospace Center DLR are involved. CoTeSys investigates cognition for technical systems such as vehicles, robots, and factories. Cognitive technical systems are equipped with artificial sensors and actuators, integrated and embedded into physical systems, and act in a physical world. They differ from other technical systems in that they perform cognitive control and have cognitive capabilities.

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**Technische Universitaet Muenchen (TUM)** is one of Europe's leading technical universities. It has roughly 460 professors, 7,500 academic and non-academic staff (including those at the university hospital "Rechts der Isar"), and 26,000 students. It focuses on the engineering sciences, natural sciences, life sciences, medicine, and economic sciences. After winning numerous awards, it was selected as an "Elite University" in 2006 by the Science Council (Wissenschaftsrat) and the German Research Foundation (DFG). The university's global network includes an outpost in Singapore. TUM is dedicated to the ideal of a top-level research based entrepreneurial university. <http://www.tum.de>