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Robots With Better Observation

Apr. 12, 2010 — A new 3D sensor will enable robots to observe their environment in a more natural and human-like manner.

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The TACO project, starting in February 2010, will make it possible to apply current robots in more sophisticated markets so that they will play a major role in the fields of cleaning, construction, maintenance, security, health care, entertainment and personal assistance in the future.

TACO employs 3D foveation to significantly improve on current 3D sensor systems.

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Foveation enables the TACO systems to acquire 3D images with coarse level of details, to apply fast object detection techniques to select areas of interest in the coarse 3D image and then concentrate image acquisition of regions or details of interest. Similar to the human eye, the robot will become able to focus on the most relevant object and scan and monitor it closely and detailed.

Ten times better resolution

The TACO sensor will enable significantly better, faster and cheaper 3D sensing compared to current laser scanners, says Jens T Thielemann, TACO's technical lead.

"Through the foveation process, the sensor will provide 10 times better resolution than existing sensors with hardware enabling a 10 times size resolution," he continues. A significant amount of resources is committed towards verification and benchmarking of the sensor. "One of the most important project deliveries will be an easily accessible report comparing the TACO sensor to existing 3D sensors," Thielemann says, "making the TACO advantage clear to the European robotics community."

Main goal

The main goal of TACO is to develop a flexible, compact, robust and low cost 3D sensing system that includes the following three major parts:

1. a novel concept for fast attention level management
2. a 3D laser scanner sensor
3. a software framework

This project aims to advance the European robotics industry by addressing the strategic challenges of 3D sensing and producing innovative technologies.

About TACO

TACO (Threedimensional Adaptive Camera with Object detection and foveation) is a European Commission co-financed small or medium-scale focused research project under the 7th Framework Programme. The project started in February and the duration is defined for 30 months.

TACO's consortium is composed of four research institutes, two industrial companies and one university, which are all seated in Europe (Austria, UK, Germany and Norway). The expertises of the consortium members are widespread and range from the development of the required hardware and software components to the provision of the test environment to the experience of international project coordination.

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