



**DANISH
TECHNOLOGICAL
INSTITUTE**

DTI Centre for **Robot** Technology, Denmark

Danish Technological Institute

The Danish Technological Institute (DTI) is the leading technology service provider to the Danish industry and society and holds a strong international project portfolio.

DTI develops, applies and disseminates research and technology knowledge, and the Institute takes part in development projects of use to society in collaboration with leading domestic and foreign research institutions. DTI also carries out consultancy and standardisation services, and the Institute holds courses, certifications and lectures for the continuing education of the Danish work force.

DTI was established more than a hundred years ago and today employs around 1.000 people in 33 specialist centres and five foreign affiliates.

DTI Centre for **Robot Technology in the city of Odense**

DTI Centre for Robot Technology's specialty is innovate new robotic solutions and knowledge about their use for the manufacturing, food, construction, agriculture, horticulture, forestry and garden industries as well as the health care and welfare sector.

Centre for Robot Technology takes responsibility all the way from problem identification, to solution design and to the implementation and actual impact documentation. The centre's two main focuses are:

- To develop ideas, build and demonstrate solutions, test, measure and document the effects, as well as to innovate new businesses and useable products in the process.
- To spread new robotic knowledge to manufacturing companies, research institutes, public institutions and to ensure and support an effective implementation and maintenance of technological solutions.

Consultancy, laboratory tests, transfer of knowledge at conferences, workshops, courses and in networks are some of Centre for Robot Technology's means of knowledge sharing.

DTI's Centre for Robot Technology is based in Odense, which is the "Silicon Valley for Robotics" in Denmark. All companies, public institutions, technology transfer companies, research institutions, NGOs, government organisations and users of robotics solutions from all branches and sectors work closely together in a formal Danish network named RoboCluster. DTI's Centre for Robot Technology took part in giving birth to RoboCluster in 2002 together with numerous of other partners in the network and the Centre has played a key role in the continued development and expansion of the network. It has never been larger, stronger and more effective than it is today.

The centre in particular works together with small and medium sized companies, SMEs, that employ between 15 and 200 people. Centre for Robot Technology has more than 120 industrial partners and 10 partner universities.

The Centre opened the new “Innovatorium for Robot- & Welfare Technology” facility in July 2009. 6.000 users are expected to visit the Innovatorium during its first year. The whole idea is to bring together research results and the newest robot technologies from Denmark and internationally, and present the technologies in a way that enables the users to play and interact with the technology in order to get an understanding and an insight into the workings of the technologies. The idea is to give the users an inspiration that they can directly use in the innovations a home, whether it is development of new robotic solutions for industry, new logistics solutions for an elderly care home or an agricultural solution for keeping animals on free land. Over the coming years the concept will be further developed and it is expected to become a new factor in dissemination and exploitation instruments in future projects.

Five factors and five main areas

In September 2009, 30 robotics specialists work at the Centre and more than 20 significant innovation projects are in the portfolio. The projects span from pure research to prototype and demonstrator development of new components and systems in the following main areas: Manufacturing and Food Industry, Health and Welfare, Green Robotics, Intelligent Architecture and Edutainment. Five significant Danish key factors strongly support the focus on these five domains:

- Danish manufacturing industry is mainly SMEs with 50-200 employees and requires hyper-flexible robot cells to handle small series, many variants, short lead time, integration of multiple processes, non-expert operators, one robot at a time installations and limited investment capacity. As a consequence the Danish robotics integrators are today among the best in the world when it comes to specific SME requirements.
- Danish food industry and manufacturers of food industry machinery are very significant in size and innovations on a global scale. In particular Danish pork slaughter houses and suppliers of stainless steel machinery to the sector take a lead.
- Danish farming and especially pig farming is on an international scale quite significant. This also includes an associated industry that makes farming facilities, machines and technologies. Innovative minds drive forward the developments in this sector which is amongst the most automated in the world.
- Danish public health care and nursing sector is extremely professional with highly skilled personnel as well as innovative minded management. Denmark is probably one of the best countries in the world to facilitate user-driven innovations as well as product development, testing and market introduction of health care and welfare solutions.
- Danish architects are world famous within furniture, textiles and buildings. Strong traditions in design and user-driven thinking come into play when solutions and products of tomorrow are being developed. This also affects the inclusion of man-building, man-classroom, man-machine interaction paradigms where Danish designers strongly believe in concepts that are based on aesthetics, in well being, in motivation and in playful learning scenarios.



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