

techman / December 22, 2012 09:49PM

[\[BioMedical Engineering\] NCKU Unveils i-Transport for the Handicapped](#)

[BioMedical Engineering] NCKU Unveils i-Transport for the Handicapped ([Chinese Version](#))

NCKU News (2012/12/17) A new generation of intelligent mobile chair carts for the handicapped called "i-Transport," which can be adjusted to the user's height and position while taking stuff or talking to others, has been developed by a National Cheng Kung University research team.

The team was led by Fong-Chin SU and Tain-Song CHEN, professors from the NCKU Department of BioMedical Engineering (BME).

The novel mobile device has attracted great attention as it had a great impact on the biomedical field when it was displayed at a recent forum hosted by the Ministry of Education (MOE), Taiwan.

SU pointed out that i-Transport was designed with an embedded health monitoring system for tracking blood pressure and breathing conditions, providing the handicapped with the basic pride of standing and moving.

I-Transport is a multi-functional carrier which can help adjust the action of lifting, shifting, standing, moving while also serving as a physiological monitor, thus assisting the disabled to move and stand in order to undertake daily chores, as well as fulfill their desire to move around and meet their demand for independence, added SU.

CHEN explained that i-Transport uses Altera FPGA, a newly developed intelligent control chip which has the Nios II embedded multi-core processor for developing software and hardware design of the cart's control systems.

He said, the control system includes the robotic arm, the electric-driven vehicle wheel, and the operator control panel, whereas the control and drive system includes D.C. motors for robotic arms, rim motor drives, operator control panel interface circuit and the FPGA-based intelligent control chip.

He said, the design of the i-Transport carrier also includes safety measures. Using the ANSYS Workbench software, when the carrier carries a load (assuming the load to weigh 100 kg), 3 safety factors including shape change, stress and safety parameter are analyzed and then simulated.

If the safety factor is greater than 1, it basically means that regardless of sitting or standing postures, this design is safe and cannot be easily damaged, according to SU.

Further Information:

[NCKU News 2012/12/17](#)

---

[National Science Council International Cooperation Sci-Tech Newsbrief](#)

---

Edited 1 time(s). Last edit at 12/22/2012 09:52PM by techman.

---