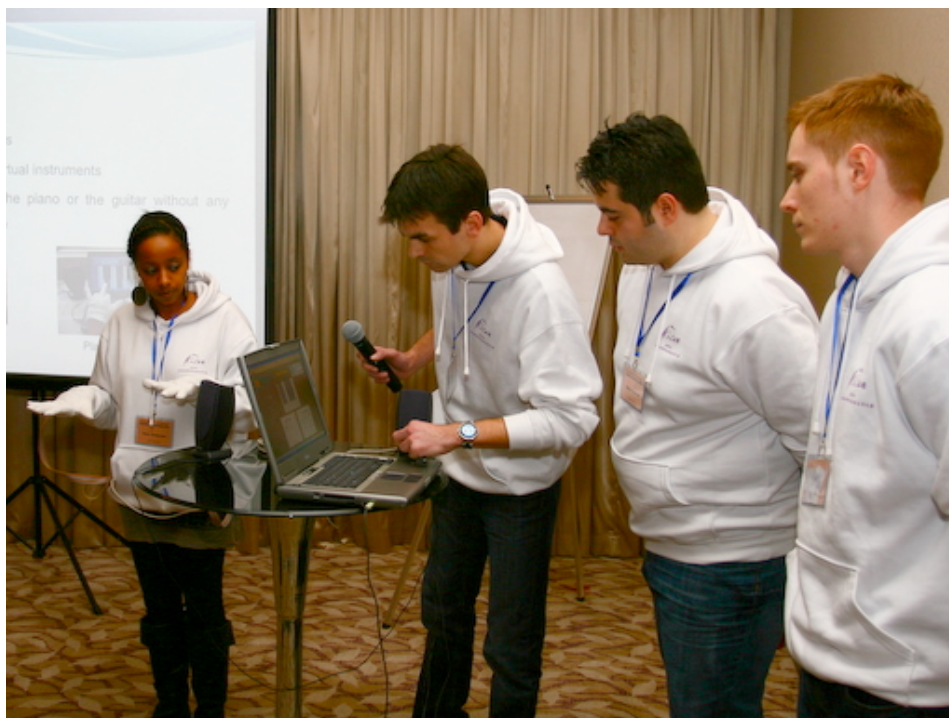
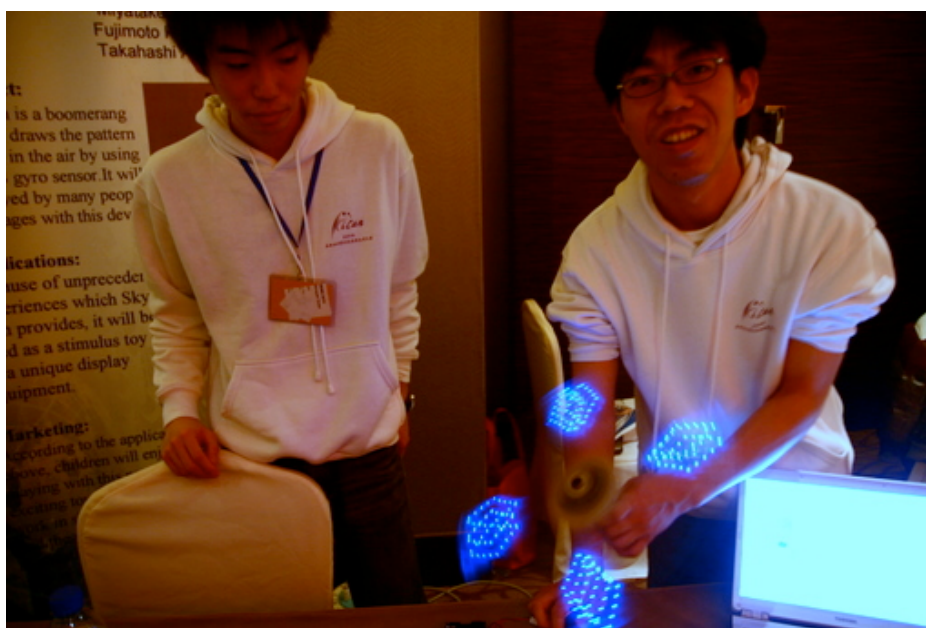


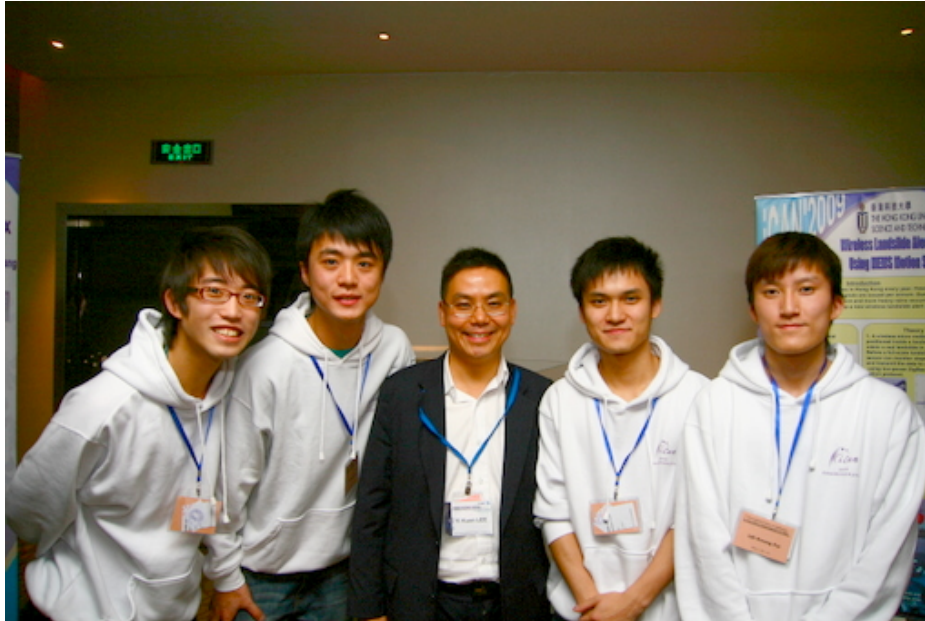
mainland, China. The competitors were all seniors and were proud for their achievement.



Another first-prize winner was “Music Glove” from Saarland University of German. As a virtual musical instrument, it can imitate piano and guitar according to data collected from magneto resistive sensors planted at each finger. More acceleration sensors are used to measure the orientation of the hands. College students Christian Bur, Manuel Barra, Eliseo Pignanelli, Esther Tesfagiorges were giving a test performance during their presentation.



“Sky Fish” by Kyoto University of Japan was a boomerang that can draw patterns of light in the air. It won a second-prize.



An ambitious team made of four students and their coach from Hongkong University of Science and Technology: HOI Man Yiu , CHOW Ka Hei, LEI Kwong Pui, MAK Tsz Wai and Prof. Yi-Kuen Lee. Their project “Wireless Landslide Alert System for Slopes in Hong Kong Using MEMS Motion Sensors” has a noble goal to alarm citizens and the authority before the catastrophe so as to reduce casualty by maximum. It won a second-prize.



Another cool project from Taiwan: Sensor Mechanism on WSN Smart Pillbox. Under the supervision of their professor, Dr. Yao-Joe Joseph Yang, the three master’s students Wei-Chih HSU, Yi-Chung LAN, Wen-Wei CHANG developed a smart pillbox while can indicate whether the pills have been taken by the patient or not. It is going to undergo market analysis and living lab test soon. It also won a second-prize.

Experts from the international industry of nano-micro technology were quite impressed by



## The Second International Contest of Applications in Nano-micro Technology (iCAN'11)

the creativity of the students. Kurt Peterson, President of KP-MEMS from California said in his speech, "The innovativeness of these young students takes me by surprise. Their projects cover so many fields of applications and are full of imaginations."

People from the academic world were also glad to help to construct a platform where young students from all over the world will communicate and share their wonderful idea. Prof. Chihming Ho, Academician of American Academy of Engineering, and regional organizer of USA said, "I truly hope more and more college students will join this international contest and prove to the world that 'I can'!"

Nine middle school teams also attended the exhibition and attracted a lot of attention. According to Prof. Haixia Zhang, regional organizer of mainland, China, there will be a middle-school sub-contest in iCAN 2011.

iCAN 2011 will be launched in March 2010. All teams must go through domestic contest first and the best will compete in the finals between June 5th and 9th, 2011, which will be held together in Beijing with Transducers'2011, an important conference in the field of nano-micro technology.

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### ➡ iCAN'09 CHAMPION: SMART CRIB

**Title: Intelligent Crib**

**Team: Hanbin Lin, Erwei Wang, Runquan Mo, Wenhong Zhang**

**University: North University of China**

**Abstract:** The project adopts MSP430F149 as the data acquisition, analysis and control core, proposing a method which can control the crib to perform regular swing by collecting information from the infant in the crib. Using the MXC6202xMP accelerometer to collect information on the activities of the baby in the crib and the information will be transmitted into the MSP430F149, then the MSP430F149 will analyze the information collected, and eventually control the electromagnetic swing machine to swing from side to side arc.

Its advantages are listed as follows: Able to choose automatically whether to start the swing according to the baby's specific activities. In addition, the SD Card voice function is designed to comfort the baby. To be more splendid, the parents within 300m can observe the current state of the infant through the wireless video, and they also can control the crib to operate accordingly through the wireless device.

This invention enables the parents to feel free to do their work in their house, saving the trouble of keeping the baby's company all the time. It's even more significant for young couples, who are suffering from a heavy workload and multiple businesses. This invention is just a beginning. It's believed that there is an immense market there to be explored. Moreover, based on the splendid advantages over the traditional crib, it's possible to bring about a revolution about new facilities for babies.

**Keyword:** MSP430F149 accelerometer, wireless video, crib



### Advantages

- Intelligent analysis: According to the baby's specific activities, choose automatically whether to start the swing through the data processing and analysis of the MSP430F149.
- SD Card Voice replacement: Through the SD card, parents can always replace a variety of music or voice, to satisfy different users' needs.
- Wireless Operation: When the baby wakes up, the parents within 800m will be informed through the wireless device. The parents can observe the current state of the infant through the wireless video, and they also can control the crib to operate accordingly through the wireless device.
- energy-saving, running smoothly, safe and noise-free: This product adopts the electromagnetic swing machine of our own design, to make the process of the swing smooth, safe, energy-saving and noise-free. With a current of 20mA only in the standby detection mode, and around 500mA in the working mode, it truly plays a role in energy conservation.



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### ➡ iCAN'09 CHAMPION: MUSIC GLOVES

**Title: Music Gloves**

**Team: M. Barra, C. Bur, E. Pignanelli, E. Tesfagiorgis**

**University: Universität des Saarlandes, Germany**

**Abstract:** The consumption and toy industry is a constantly growing sector. There is a booming demand for interactive gaming, in which physical movements of the player need to be detected. The aim of this project is therefore the implementation of a hand glove which is able to

detect the user's hand and finger movements. The acquired data can be used to play virtual instruments for instance.

The Music Glove is a new instrument to play the piano and the guitar. With this instrument it is possible to play in the free space without another additive. In the piano mode eight sounds can be played, in the guitar mode four sounds or accords are possible. The change of the instrument is easily done by turning the right hand. Magneto resistive sensors are planted at each finger to detect the movement of the fingers. Furthermore acceleration sensors are used to measure the orientation of the hands.

The signals of each sensor are transferred to a computer. Software was developed to process the signals and to play predefined sound files. If a defined value of finger bending is passed, the software decides to make a sound. The sound files can easily be changed so that different instruments can be played.

**Keywords:** Music glove; virtual instrument; magneto resistive; movement; piano; guitar; free-movable music gloves; acceleration sensors; toy.

### Advantages:

- Different instruments
- Easy to use
- Playing in free space without additives
- Changing the instrument while playing
- Versatile human interface device
- No mechanical wearing parts
- Other instruments possible by replacing sound files

