# i-CREATe 2013

***i***nternational **C**onvention on **R**ehabilitation **E**ngineering & **A**ssistive **Te**chnology

29 – 31 Aug 2013

KINTEX, Gyeonggi-do, South Korea

In Conjunction with

**Jointly organised by:**







## Contents

## Welcome

We are pleased to welcome you to the 7th International Convention on Rehabilitation Engineering and Assistive Technology (*i*-CREATe 2013), 29 – 31 Aug 2013 in Gyeonggi, Korea. This year *i*-CREATe is organized in concurrent with SENDEX 2013 - Korea's best and biggest expo for Seniors & People with disabilities.

The 6th SDC@ *i*-CREATe is an annual student design competition that challenges undergraduates from all over the world to creative and innovative Assistive & Rehabilitation Technology (A&RT) projects that socially benefits and improves the quality living of people with special needs and elderly.

"Learning, Living & Working with my Assistive & Rehabilitation Technology (A&RT)"; the theme of *i*-CREATe 2013 promotes novel scientific research, develops regional networks and supports Person with Disability residing in Asian with state-of-the-art and functional Assistive, Rehabilitation & Therapeutic technology.

It is estimated that around 10% of the world's population, or 650 million people, live with a disability. About 80% of persons with disabilities live in developing countries. In an inclusion society, it is "everybody's business" to apply advanced technology to enhance the performance and education capabilities of persons with disability including children. Due to novel and innovative A&RT, children with disabilities have improved scholastic achievement, and working individuals shown employers that they have an 85% retention rates and 12.2% have small business experience that are assets to employers.

*i*-CREATe 2013 is the stage you want to visit and join advocates, researchers and professionals from across the countries at plenary sessions, workshops, forums and scientific presentations to discuss how assistive and rehabilitation technology is integrated in education, living and working environment for Persons with Disability.

We wish you a pleasant time in Gyeonggi, South Korea!

General Co-Chairs:

**Prof Kil-sung OH**

**Prof Pairash THAJCHAYAPONG**

**Prof Wei Tech ANG**

## General Information

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|---|---|
| **Conference Date:** | 29 - 31 Aug 2013 (Thu - Sat) |
| **Conference Venue:** | KINTEX 1, Level 2 & 3<br>(above Exhibition Hall 3 & 4)<br>Hallyuworld-ro, Ilsanseo-gu,<br>Goyang-si, Gyeonggi-do, 411-766 Korea |
| **Opening Hours:** | 09:00h to 17:30h (29 – 30 Aug 2013)<br>09:00h to 12:00h (31 Aug 2013) |
| **Admission:** | Open to registered delegates only |
| **Registration:** | KINTEX 1, Exhibition Hall 3 & 4<br>Foyer Level 1 |
| **Plenary Sessions :** | KINTEX 1, Grand Ballroom, Level 3 |
| **Workshops & Paper Presentations:** | KINTEX 1, Level 2 |
| **Student Design Challenge (SDC) Presentations & Exhibition** | KINTEX 1, Exhibition Hall 4, Level 1 |
| **Poster Exhibition:** | KINTEX 1, Exhibition Hall 4, Level 1 |
| **Gala Dinner &<br>SDC Award Ceremony :** | 29 Aug 2013 (17:40h – 20:00h)<br>Grand Ballroom Level 3<br>**open to all delegates & SDC students* |
| **Farewell Dinner :** | 30 Aug 2013 (18:30h – 20:30h)<br>Grand Ballroom Level 3<br>**open to all delegates & SDC students* |
| **Secretariat Room** | KINTEX 1, Room 209, Level 2 |

## Paper Session Information

All Chairpersons and Speakers are requested to be in their respective session rooms at least 10 minutes prior to the commencement of each session. A total of 15 minutes has been allocated for each oral presentation, including time for questions (12 minutes presentation + 3 minutes question and answer.) Session chairpersons will strictly enforce this limit. Presenters are requested to keep their presentations within the time limits stated. Presentations must be carried out using **Microsoft PowerPoint**. No OHP or slide projector will be provided.

For presenters using Microsoft PowerPoint, they are encouraged to bring their files on a USB flash drive (thumb drive) and upload their files at the respective presentation room 30 minutes before the session.

## Poster Session Information

All posters must be presented at the conference in paper, vinyl or fabric poster of A1 size (594mm x 841mm).

Poster presenters will be provided with a vertical display panel with pins– approx. 1800 x 1200mm

The set up time is on 29 Aug 2013 (Thu) 09:00h – 09:30h and should be taken down on 31 Aug 2013 (Sat) between 11:30h & 12:00h.

Presenters are required to attend their poster session on 30 Aug 2013 from 13:15h – 13:45h at KINTEX 1, Exhibition Hall 4, Level 1.

All poster presenters are also required to give a 2-minute introduction of their posters at the allocated paper session on 30 Aug 2013 (see paper presentation sessions for details).

## Site Visits (Day 3 – 31 Aug 2013, Sat)

**#1 Technical Tour (No Charge)** 13:30h – 19:00h (5.5h)

**Holt Children's Services** Inc. (Holt) began in 1955 when Americans Harry and Bertha Holt adopted eight Korean War orphans. Holt Children's Services Inc. became independent from USA Holt (Holt International or Children's Services) in 1977 and has developed into a professional and world-renowned organization that facilitates domestic and international adoptions. Holt has diversified into fields of services for the disabled, youth, family advocacy and preservation, and other community social services. Holt is now one of the largest social welfare organizations in the world and a 21st century leader in the social services arena. Holt will continue to pursue and develop key objectives described in this site in order to help build and maintain strong social welfare programs for Korean and international communities.

**ATRAC (Assistive Technology Research & Assistance Center**) is the first assistive technology service institute in Korea which was established in 2004 for the purpose of research, support the industrialization of assistive technology and offer customized assistive technology service for people with disabilities with an objective for creating a better life for the senior citizens and people with disabilities.

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**#2 Incentive Tour (USD50)** – 13:30h – 19:00h (5.5h)

**DMZ (De-Militarized Zone)**

**Imjingak** located 7 km from the Military Demarcation Line, is now at the forefront of tourism related to the Korean Conflict. It was built in 1972 with the hope that someday unification would be possible. Three-storied Imjingak is surrounded by several Monuments, Unification Park and
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North Korea Center. Outside Imjingak, there are 12 kinds of tanks and crafts on display that were used during the Korean Conflict.

**Dora Observation Platform.** Visitors can view a part of North Korean life from this observation platform, the nearest point to North Korea from South Korea. This 304 sq. ft., 500-person capacity observation platform was constructed following the closing of the Mt. Songak Observation Platform. It is located on Mt. Dora in Gunnnae-myeon, Paju.

***The 3rd tunnel is** 44 kilometers from Seoul (less than an hour's drive), the third tunnel was discovered in October 1978. Almost identical in structure to Tunnel 2, the 1.635 kilometer-long tunnel is 1.95 meters high and 2.1 meters wide. It penetrates 435 meters south of the Military Demarcation Line at a point 4 kilometers south of the Panmunjeom, running through bedrock at a depth of about 73 meters below ground. Capable of moving a full division (plus their weapons) per hour, it was evidently designed for a surprise attack on Seoul. This tunnel is only 2 kilometers from a key outpost defending the Musan corridor leading to Seoul.

**3rd tunnel is not a wheelchair and disabled friendly tourist site.*

*All delegates are to pre-register via email by 22 Aug 2013. There is NO guarantee of available seats for on-site registration. The tour buses will leave at 13:30h and back to KINTEX 1 at 19:00h, depending on road conditions.*

## Program Overview for Day One: 29 Aug 2013 (Thursday)

| Time | Grand Ballroom (Level 3) | Exhibition Hall 4 (Level 1) |
|---|---|---|
| 08:00 | Registration @ KINTEX 1, Exhibition Hall 3 & 4 Foyer, Level 1 | |
| 08:30 | | SDC Presentation (Design / Technology) |
| 09:00 | | |
| 10:30 | Tea Break @ Level 2 | |
| 11:00 | 2013 Active Aging Korea International Symposium | SDC Presentation (Design / Technology) |
| 12:30 | Lunch / Poster & Exhibition viewing @ Exhibition Hall 4, Level 1 | |
| 14:00 | Welcome Ceremony | |
| 14:10 | Plenary I<br>Prof Kil-Sung OH | |
| 14:50 | Plenary II<br>Prof Marco SANTELLO | |
| 15:30 | Plenary III<br>Prof I-Ming CHEN | |
| 16:10 | Tea Break @ Level 3 | |
| 16:30-17:00 | Plenary IV<br>Prof Jiro SAGARA | |
| 17:40-21:00 | Opening Ceremony / Gala Dinner / SDC Award Presentation @Grand Ballroom 3, Level 3 | |

| Time | **Room 207 (Level 2)** | **Room 208 (Level 2)** | **Room 210 (Level 2)** |
|---|---|---|---|
| 08:00<br>08:30 | Registration @ KINTEX 1,<br>Exhibition Hall 3 & 4 Foyer, Level 1 | | |
| 09:00 | Paper Presentation P1<br>Augmentative & Alternative Communications | Paper Presentation P2<br>Rehabilitation Studies | Workshop 1<br>Design & Implementing of office of disability service that can effectively support AT & online distance learning |
| 10:30 | Tea Break @ Level 2 | | |
| 11:00 | Paper Presentation P3<br>ICT & Computer Access | Paper Presentation P4<br>Rehabilitation System | by Brandman University (USA) |
| 12:30 | Lunch / Poster & Exhibition viewing @ Level 1 | | |
| 14:00<br>to<br>17:00 | Opening Ceremony & Plenary Sessions<br>@ Grand Ballroom, Level 3 | | |
| 17:40-21:00 | Opening Ceremony / Gala Dinner / SDC Award Presentation<br>@ Grand Ballroom, Level 3 | | |

## Day Two: 30 Aug 2013 (Friday)

| Time | Exhibition Hall 4 (Level 1) | Room 207 (Level 2) | Room 208 (Level 2) |
|---|---|---|---|
| 08:00 | Registration @ KINTEX 1, Exhibition Hall 3 & 4 Foyer, Level 1 | | |
| 09:00 | Posters & Student Design Challenge | Paper Presentation P5 NeuroRehabilitation Technology | Paper Presentation P6 Social Issues & Accessibility |
| 10:15 | Tea Break @ Level 2 | | |
| 10:45 | Exhibits (Open to All) | Paper Presentation P7 Rehabilitation Technology | Paper Presentation P8 Assistive Technology |
| 12:45 | Lunch / Poster & Exhibition viewing @ Level 1 | | |
| 14:00 | Posters & Student Design Challenge | Workshop 4 From an idea to a researchable question - a short course! | Asia Alliance Forum by RESKOR (Korea) RESJA (Japan), TREATS (Taiwan) NECTEC (Thailand) |
| 15:30 | Tea Break @ Level 2 | | |
| 16:00 – 17:30 | Exhibits (Open to All) | by PCHRU, South Western Sydney Local Health District (Australia) | HKOT (Hongkong) i-CREATe (Singapore) |
| 18:30 – 21:00 | Farewell Dinner at Grand Ball Room (level 3) | | |

| Time | **Room 210 (level 2)** | **Room 211 (Level 2)** |
|---|---|---|
| 08:00 | Registration @ KINTEX 1, Exhibition Hall 3 & 4 Foyer, Level 1 | |
| 09:00 | | Workshop 2<br>Mobility Technology & Service in India |
| 10:15 | Tea Break @ Level 2 | |
| 10:45 | Workshop 3<br>Adapted Sports & leisure device (bike) by ATRAC (Korea) | by<br>Indian Spinal Injuries Centre (India) |
| 12:45 | Lunch / Poster & Exhibition viewing @ Level 1 | |
| 14:00 | Workshop 5<br>Driving Rehabilitation for Senior & PWDs | Workshop 6<br>Implementation of mainstream tech based AAC system |
| 15:30 | Tea Break @ Level 2 | |
| 16:00 – 17:30 | by<br>KSAT (Korea) | by LifeTec<br>(Australia) |
| 18:30 – 21:00 | Farewell Dinner at Grand Ball Room (level 3) | |

## Day Three: 31 Aug 2013 (Saturday)

| Time | Exhibition Hall 4 (Level 1) | Room 207 (Level 2) | Room 208 (Level 2) | Room 210 (Level 2) |
|---|---|---|---|---|
| 08:30 | Registration @ KINTEX 1, Exhibition Hall 3 & 4 Foyer, level 1 | | | |
| 09:00 | Posters & Student Design Challenge | Workshop 7 An Australia web based model for empowering consumers at AT selection by Indpendent Living Centre (Australia) | Workshop 8 Touch the world, the power of tactile graphic | Workshop 9 Neuromuscular rehabilitation of hand function: basic and applied research |
| 10:30 | Tea Break @ Level 2 | | | |
| 11:00 | Exhibits & SDC Forum (open to all) | Paper Presentation P9 Special Education | by Harpo SP.Z.O.O (Poland) | by ASU (USA) / ETHZ(Switzerland) / NTU (Singapore) / SNU & KAIST(Korea) |
| 12:35 | Lunch (Not provided) | | | |
| 13:30 to 19:00 | < Optional Site Tour > Site Tour (1) - Holt Children's Services & ATRAC Site Tour (2) - DMZ Tour *Delegates are advise to register in advance for the tour as seats are limited (closes on 12 Aug 2013) | | | |

## Plenary Sessions

Day ONE: 29 Aug 2013 (Thursday)

**Prof Kil-Sung OH**

Professor
Department of Rehabilitation, College of Human Service, Hanshin University
President of Korea Assistive Technology Service Association (KATSA)
South Korea

Professor Kil-Sung Oh, is the director and founder of Assistive Technology Research & Assistance Center (ATRAC) which is the first assistive technology service center in South Korea financially supported of Gyeonggi Province Government. He received the B. A. degree in psychology from Korea University in 1980, M. A. degree in psychology from Seoul National University in 1984 and Ph. D. degree in rehabilitation from Southern Illinois University-Carbondale in USA in 1993 respectively. His original research interest is a vocational rehabilitation counselling and he is now the President of Korean Academic Society of Vocational Rehabilitation (KASVR). In addition, he has a strong interest in developing the assistive technology services in Korean society because he has a severe physical disability and uses a wheelchair. He was attacked by poliomyelitis when he was 8 months old.

Venue: Grand Ballroom (Level 3)

Time: 14:10h – 14:50h

**Title: Assistive Technology and Vocational Rehabilitation**

Vocational rehabilitation is the most important among aspect several fields of rehabilitation, as it is called "the flower of rehabilitation" in Korean language. But it was proved that the traditional 'train-place' model based on the similar perspective with the Medical Model of

disability has limitation as the vocational rehabilitation approach for people with disabilities. The incident which provided a concrete chance to make the people recognize that the Medical Model is not desirable in approaching to the problem of disability is the independent living movement in the 1970's. It requires the paradigm shift from the Medical Model to the Social Model. Professionals working in the rehabilitation field should focus more on how they change the surrounding environment of people with disabilities, rather than how they provide remedial, educational or training intervention to reduce and eliminate their functional limitations. One of the most efficient ways to change the surrounding environment of people with disabilities is assistive technology. In this article, several factors that make the desirable situation to use the assistive technology skills for the vocational rehabilitation of the people with disabilities in Korea are discussed.

**Prof Marco SANTELLO**

Professor
Director and Harrington Endowed Chair in the School of Biological and Health Systems Engineering Arizona State University
USA

Prof Santello is the director of the Neural Control of Movement Laboratory whose mission is to characterize the neural mechanisms underlying sensorimotor transformations, control, and learning of hand movements. His laboratory uses complementary research approaches, ranging from intramuscular electromyography and transcranial magnetic stimulation to motion tracking, kinetic analysis, and virtual reality environments. Prof. Santello's research has applications to rehabilitation of hand function, prosthetics, and biologically-inspired robotics. Dr. Santello has published his work (70+ publications) in neuroscience and engineering journals. He currently serves as regular member of the Motor Function, Speech, and Rehabilitation Study Section at the

National Institutes of Health and Associate Editor for Frontiers in Bionics and Neuroscience and Biomedical Engineering.

Venue: Grand Ballroom (Level 3)

Time: 14:50h – 15:30h

**Title: Neural control of the hand: Experimental approaches and clinical applications.**

Skilled control of the hand is essential for performing activities of daily living such as self-feeding, buttoning-unbuttoning a shirt, tying shoe-laces, and using a wide variety of tools. We become particularly aware of the central role that the hand plays in our daily activities when faced with traumatic injury or neurological disorders impairing the spatial and temporal coordination of finger movement and forces. As the hand is characterized by a complex biomechanical and neural architecture, complementary research approaches are required to further our understanding of how the central nervous systems controls the hand. I will review recent work from my laboratory based on hand kinematics and kinetics, electromyography, kinetic analysis, virtual reality, and transcranial magnetic stimulation aimed at elucidating neural control mechanisms underlying grasping and dexterous manipulation. This work will be presented in the context of clinical applications, including the assessment of sensorimotor function and rehabilitation approaches, as well as insights gained from behavioural studies for the design of biologically-inspired hand prostheses. I will conclude my talk with open questions in the area of sensorimotor rehabilitation of hand function and directions for future research.

**Prof I-Ming CHEN**

Associate Professor
Fellow, IEEE & ASME
Nanyang Technological University
Singapore

Prof Chen, Fellow of IEEE, Fellow of ASME, and General Chairman of IEEE International Conference on Robotics and Automation (ICRA) 2017, Singapore, is a world renowned roboticist with significant contributions in modular robotics, actuation design and wearable mechatronics. For the past 10 years, he had received funding of more than S$10 million in the related areas as a Principal Investigator. He is currently Director of Intelligent Systems Centre, which is co-funded by NTU and ST Engineering and also Director of Robotics Research Center of NTU. He received the B. S. degree from National Taiwan University in 1986, and M. S. and Ph. D. degrees from California Institute of Technology, Pasadena, CA in 1989 and 1994 respectively. His research interests are in wearable sensors, human-robot interaction, reconfigurable automation, parallel kinematics machines (PKM), biomorphic underwater robots, and smart material based actuators. Prof. Chen has published more than 260 papers in refereed international journals and conferences as well as book chapters. He has been serving on the editorial boards of IEEE Transactions on Robotics, IEEE/ASME Transactions on Mechatronics, Mechanism and Machine Theory, and Robotica.

Venue: Grand Ballroom (Level 3)

Time: 15:30h – 16:10h

**Title: Integrated Wearable Haptic Interface for Activity of Daily Living Measurement and Arm Posture Correction**

This presentation will introduce the development of a system to measure the upper arm and hand movement using inertia-based and optical sensors, and to correct arm posture using haptic-based feedback.

To measure the complete arm motion, thee Integrated Measurement Units (IMU) were combined to put on the upper arm. To measure the 15 DOFs of the hand, a SmartGlove, which uses patented optical linear encoder (OLE) based sensors is developed. With these two systems, 5 different activities of daily living, such as holding a cup, opening the door, of 15 healthy subjects and 15 stroke patients are measured under clinical trials in Tan Tock Seng Hospital. A posture correction system based on vibrotactile motor-based haptic feedback together with the upper limb measurement system is investigated. This system allows the subject to mimic another person's arm postures with a novel posture comparison algorithm and protocol. A version of the system is demonstrated to show its feasibility to aid therapists when conducting stroke rehabilitation.

**Prof Jiro SAGARA**

Professor
Kobe Design University School
Design Department of Product Design
Japan

Prof Jiro Sagara, Professor at Kobe Design University School of Design Department of Product Design, Japan obtained a Ph D. in Design at the Kobe Design University. Professor Sagara teaches classes lectures on Universal Design in the School of Design and Graduate School of Arts and Design. He has over 30 years of clinical experiences in Assistive Technology research and development in Hyogo Rehabilitation Centre and Hyogo Assistive Technology Research Institute. Professor Sagara is president of Rehabilitation Engineering Society of Japan, Representative of Kansai blanch of Japanese Association of Inclusive Society, Secretary General of Design Research Association and Councillor of Japanese Society for the Science of Design. He is also a Coordinator of Universal Design City Planning of Kobe City and a Chair of the steering committee

of Building Inclusive Society in Hyogo Prefecture with Participation and Cooperation.

Venue: Grand Ballroom (Level 3)

Time: 16:30h – 17:00h

**Title: Rehabilitation Engineering and Assistive Technology in Hyper Aged Japanese society.**

The population ratio of elderly persons exceeded 23% in 2012 in Japan. The budget of the public care insurance which has been enacted in 2,000, becomes 247% in 2012. Persons who need care and over 50 years in house can rented twelve kinds of AT or can purchase five regulated AT with 10% charge of each price. Other persons who have disabilities also can use listed AT by other supporting law in Japan. Although these funding supports for AT are in effect, some problems are still remain in using AT properly. One of problems is less consultation or advice for choosing appropriate AT and how to use them by AT specialists. Adding this, there is less AT which focused on independent living than AT for care givers in Japan.

## Workshop Sessions

*Workshop 1*:

29 Aug 2013 (Thursday), 09:00h – 12:30h

Room 210

**Designing and implementing an office of Disability Service that can effectively provide Assistive Technology support to online and distance learners**

*By Brandman University, USA*

This workshop will focus on how to provide efficient and effective assistive technology support services for online and distance learners in higher education. Participants will learn about the growing number of students identified with disabilities within higher education, the different types of disabilities commonly encountered, and the assistive technology utilized to support their academic experience within the dynamic landscape of online instruction and distance learning. Ultimately, workshop participates will leave the session with all of the tools needed to develop and implement a university level Office of Disability Services that provides cutting edge assistive technology support within the online learning environment.

**Presenters**

Dr Loren O'CONNOR is a highly accomplished university administrator, professor, and school psychologist, as well as a marriage and family therapist. He has extensive experience in Higher Education disability services, mental health program development, and supervision of professional staff members. He is currently the Director of Disability Services at Brandman University, part of the Chapman University System, and has presented at both national and

international conferences, training university staff and faculty in the areas of disability services, litigation, and ethics for universities.

Mr Alex PRICE has a background of school psychology and extensive experience in disability services. Working with individuals with disabilities of all ages, both within the classroom and within the community, Mr. Price strives to eliminate educational barriers and encourage self-advocacy, responsibility, and independence. He is currently the Disability Services Coordinator at Brandman University, part of the Chapman University System, where he facilitates the implementation of assistive technology services and other accommodations for disabled students.

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*Workshop 2*:

30 Aug 2013 (Friday), 09:00h – 12:45h

Room 211

**Wheeled Mobility Technology and Services in Less Resourced Settings**

*By Indian Spinal Injuries Centre, India*

Approximately 65 million wheelchairs are needed worldwide, and those in less-resourced environments. There is an overwhelming need for wheeled mobility for people with disabilities in less-resourced environments like in India. However, the existing technologies are based on western-style designs which are frequently rejected either because they are unaffordable or there is a mismatch between the wheelchair & the users' environment. There is an immense need to evolve wheeled mobility technology that would ideally be economical, accessible, manufactured locally and meet clinical needs in all less-resourced
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environments. Moreover, sports equipment and technology is yet another issue for developing countries and continues to restrict participation in sports. This workshop aims to provide participants with different models of service delivery, transportation issues and a brief overview of how one can offer appropriate mobility despite the constraints in a less resourced setting.

**Presenters**

Mr Nekram UPADHYAY is the chair of Department of Assistive Technology at Indian Spinal Injuries Centre, New Delhi, India. He is also a visiting lecturer at ISIC Institute of Rehabilitation Sciences under Indra Prastha University, Delhi. Mr. Upadhyay finished his higher studies at University of Illinois at Chicago, USA and joined Indian Spinal Injuries Centre in 2006 where he established the Assistive Technology Unit within the rehabilitation services in collaboration with Department of Rehabilitation Sciences and Technology at University of Pittsburgh, PA (USA), under the supervision of Dr. Rory A. Cooper.

*Workshop 3:*

30 Aug 2013 (Friday), 10:45h – 12:45h

Room 210

**Adapted Sports & Leisure Devices (focus on bike)**

*by Assistive Technology Research Assitance Center, Korea*

These days, the leisure life is one of the highest interested fields in the daily lives of people with disabilities. Out of leisure activities, biking is one of the most accessible and the easiest sports to learn. It also has rehabilitation therapeutic effect so that it is in the limelight nowadays. However, it is tragedy that people with disabilities who are actively participating sports activities are almost nonexistent due to the physical constraints and the lack of the supply of special bike. Accordingly, as the first step for activating the area of leisure and sports activities for domestic people with disabilities, our center has developed the business of supplying customized special bike though counseling and evaluation. This workshop aims to present the status of manufacturing and supplying customized special bike for the domestic/outside disabilities. We look forward to activating the leisure and assistive technology for people with disabilities by our workshop.

**Presenter**

Mr Hamish MURRAY has worked with the Independent Living Centre New South Wales as an access consult providing advice on the built environment for the last three years. He was a builder until an injury in 2002. He had worked in at the Royal Rehabilitation Centre Sydney for 5 years where he had a close relationship with the recreational therapy staff, providing advice on building works as well as many of the recreational activities.

*Workshop 4:*

30 Aug 2013 (Friday), 14:00h – 17:30h

Room 207

**From an idea to a researchable question - a short course!**

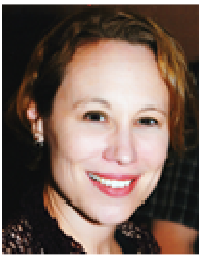
*By South Western Sydney, Australia*

Many allied health disciplines responsible for Assistive Technology and Rehabilitation interventions are considered 'research emergent'. They require focused support to engage in, and conduct, research. The Primary and Community Health Research Unit (PCHU) in South Western Sydney (Australia) supports novice researchers, and particularly practitioner researchers, across these disciplines. This hands-on workshop showcases PCHU's strategy to move novice practitioner researchers from an initial idea to a 'researchable question' and formal research protocol. It will focus on:

- Types of research activities and research questions
- Exploring and selecting researchable questions; and
- Identifying appropriate research methods and instruments to answer questions.

The workshop was developed by Assoc Prof Elizabeth Comino and Ms Emma Friesen at the Primary and Community Health Research Unit (PCHU).

**Presenter**



Ms Emma FRIESEN is a clinical rehabilitation engineer with over eight years of experience in delivering clinical education on wheeled mobility, seating and Assistive Technology outcomes. Since joining PCHU in mid-2011, Ms Emma Friesen has worked directly with novice practitioner researchers and managers to design research projects, mentor practitioner researchers and deliver research skills training. Ms Friesen holds undergraduate degrees in Manufacturing Systems Engineering and Business, a Masters degree in Vocational and Workplace Education and Training, and is completing a PhD on outcome measures for Assistive Technology.

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*Forum 1*:

30 Aug 2013 (Friday), 14:00h – 17:30h

Room 208

**Current Status and Future Trend of Rehabilitation Engineering and Assistive Technology in Asian Countries.**

*By Assistive Technology Alliance in Asia*

Representatives from six Asian countries (Singapore, Thailand, Japan, Taiwan, Korea and Hong Kong) will introduce current status and future trends of rehabilitation engineering and assistive technology. Asian countries will look for ways to join together to promote novel scientific research, develop international networks and support the health and well-being of people with disabilities residing in Asia though increasing access to technology solutions. The need for the establishment of Asian
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conference on rehabilitation engineering and assistive technology will also be addressed and discussed**.**

**Panellists**

**Prof Pairash THAJCHAYAPONG, Senior Advisor and Specialist, the National Science and Technology Development Agency (NSTDA), Thailand and Ministry of Science and Technology, Thailand.**

Prof Pairash currently serves as Chairman of the Assistive Technology Research Grant Sub-Committee at NSTDA. The topics of research grants are for example prostheses, speech assessment, fall detection, hearing aids, etc. His own research interest is in medical image processing with emphasis on computerized x-ray scanner for dental applications. His former positions are, for example, Permanent Secretary of Ministry of Science and Technology, President of King Mongkut's Institute of Technology Ladkrabang, President of NSTDA. He received his Bachelor Degree from Imperial College, University of London, and PhD from Cambridge University, UK.

**Prof Jiro SAGARA, President of Rehabilitation Engineering Society of Japan (RESJA)**

Prof Jiro is a Professor at Kobe Design University School of Design Department of Product Design, Japan obtained a Ph D. in Design at the Kobe Design University. He has over 30 years clinical experiences in Assistive Technology research and development in Hyogo Rehabilitation Centre and Hyogo Assistive Technology Research Institute.

Professor Sagara is president of Rehabilitation Engineering Society of Japan, Representative of Kansai blanch of Japanese Association of Inclusive Society, Secretary General of Design Research Association and Councilor of Japanese Society for the Science of Design. He is also a Coordinator of Universal Design City Planning of Kobe City and a Chair of the steering committee of Building Inclusive Society in Hyogo Prefecture with Participation and Cooperation

**Prof Wei Tech ANG, Founder of i-CREATe (Singapore)**

Prof Ang is an Associate Professor at the Nanyang Technological University, Singapore. He holds concurrent appointment as Head, Division of Engineering Mechanics and Director (Outreach) at the School of Mechanical & Aerospace Engineering. He received his Ph.D. degree in Robotics from Carnegie Mellon University in 2004, M.Eng. and B.Eng. degrees in Mechanical Engineering from Nanyang Technological University in 1999 and 1997 respectively. Dr Ang is one of the most active and well-funded robotic scientists in Singapore. His research focuses on robotics technologies in Biomedical applications, which include robot assisted microsurgery & cell micromanipulations, assistive & rehabilitation technology for the disabled, etc. Prof Ang is also an activist in the promotion of technology to assist and empower the disabled and aged for quality independent living. He is a founder of the International Convention on Rehabilitation Engineering and

Assistive Technology (i-CREATe).

**Dr Liang-Wey CHANG, President of Taiwan Rehabilitation Engineering and Assistive Technology Society (TREATS), PhD, P.E., C.O.**

Dr Chang received a Ph.D. in Mechanical Engineering from Purdue University (1984) and held faculty positions in US universities until 1992. Since 1992, he has been as Associate Professor in the Institute of Biomedical Engineering at National Taiwan University where he has led a Prosthetics and Orthotics curriculum at Master level, the first-of-its-kind in Taiwan since 1998 to help establish a national infrastructure for the development of Prosthetics and Orthotics. He is a member of International Society of Prosthetics and Orthotics (ISPO), and founding president of TREATS (Taiwan RE&AT Society).

**Dr Kun Min RHEE, President of Rehabilitation Engineering and Society of Korea (RESKO)**

Prof Rhee has an Ed.D in special education technology from Johns Hopkins University (1997). For the first time in Korea, he established a department of rehabilitation science and technology at Daegu University in 1997 and held faculty position since. Prof Rhee is currently the President of Rehabilitation Engineering and Assistive Technology Society of Korea (RESKO). He also holds a position as the President of Korea Association of Assistive Technology Professionals (KAATP). He is also the Head of Daegu Assistive Technology Centre

which is one of 7 centers funded by the Korea Ministry of Health and Welfare.

**Mr Simon WONG, Chairman of the Hong Kong Institute of Occupational Therapy and the Vice-chairman of the Hong Kong Occupational Therapy Association.**

He is the Department Manager in Occupational Therapy of Tai Po Hospital, a rehabilitation hospital with more than 800 beds. He was graduated in 1981 and was one of the first-batch locally trained occupational therapists in Hong Kong. He had got master degrees in Business Administration and Information Systems. His clinical interests include ADL, QOL, happiness, hand splinting and assistive technology. He had experience in setting up a wheelchair bank and running seating clinics for children with neuromuscular disease and adults with spinal cord injuries.

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*Workshop 5*:

30 Aug 2013 (Friday), 14:00h – 17:30h

Room 210

**Comprehensive Driving Rehabilitation Strategies for Elderly Drivers with Physical or Cognitive Impairments**

*By Korea Society for Assistive Technology, South Korea*

Driving plays a very important role in improving the quality of life by enabling occupational activity and participation in the society as well as physical and social independence. However, if a disorder results from a
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traffic accident, stroke, aging, it may damage the functions of recognition and perception, communication, and mind control in addition to physical functions according to the damaged part, which influences their driving ability.

This workshop will describe conditions that might interfere with safe, discuss the role as specialist with driving and appreciate how adaptive driving equipment and modified vehicles assist.

**Presenter**

Dr. Bong-Keun JUNG is a professor at the Department of Occupational Therapy at Soon Chun Hyang University in South Korea. Dr. Jung completed his doctor in occupational therapy from Washington University School of Medicine in St. Louis and worked as a post-doctoral researcher at Hand Rehabilitation Laboratory at the University of Wisconsin in Milwaukee. Dr. Jung leads the Occupational Performance and Rehabilitation Engineering Laboratory at Soon Chun Hyang University, which researches and develops innovative technologies that support human occupational functioning. His laboratory is currently conducting studies on engineering innovations for stroke and brain injury survivors, in driving rehabilitation, and for newborn infants in the NICU. Dr. Jung is also working toward building a global collaborative research network in rehabilitation engineering and occupational science research. He currently serves as board of director of the Korean Society of Assistive Technology.

Ms Jeong, YoonJu is an Occupational Therapist and is working in an Assistive Technology company. YoonJu does research work on driving rehabilitation and assistive technology at Yonsei University. Recently Yoonju did a study on a Korean version of self-report measurement of safe driving for elderly drivers**.**

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*Workshop 6*:

30 Aug 2013 (Friday), 14:00h – 17:30h

Room 211

**Considerations from evaluation to implementation of mainstream technology based AAC systems**

*By LifeTec Queensland, Australia*

This presentation will cover considerations and criteria for evaluating the suitability of using mainstream technology based AAC system. Advantages / disadvantages on utilizing mainstream technology based system in contrast to purpose built devices will be highlighted in the presentation. Discussion in relation to best practice from evaluation to trials and implementations will also be discussed though the session.
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**Presenter**

Mr Dennis (Ka Yin) LO graduated from the Flinders University of South Australia, Dennis is currently working at LifeTec Queensland as a Speech Pathologist and has been working with clients with complex communication needs in his current and previous positions. Dennis is also one of the board members of the Australian rehabilitation Assistive Technology Association and part of the Communication Aids Clinical Advisory Committee for the Medical Aids Subsidy Scheme (MASS) of Queensland. Besides Augmentative and Alternative Communication, his other areas of interest include emerging mobile technologies, environmental control and integrated systems.

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*Workshop 7*:

31 Aug 2013 (Saturday), 09:00h – 10:30h

Room 207

**Possibilities for Choice: An Australian Web Based Model for Empowering Consumers in AT Selection**

*By Independent Living Centre, NSW Australia*

The Australian service delivery framework for people with disabilities is undergoing immense change. These changes centre on “person centred approaches” with consumers having direct control of their individual support systems. Many will choose to control the purchasing of these supports, including their assistive technologies. The ability to make informed choice is therefore central to decision making and access to
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impartial, independent information adds immense value to the success of this process for many. The Independent Living Centre NSW has developed an integrated web based model of service delivery "@magic" that assists in finding assistive technologies and that links to supply. This session gives and overview of the new Australian policy context and demonstrates the capacity of www.ilcnsw.asn.au to deliver information to those who need it.

**Presenters**

Ms Robyn CHAPMAN, B.App.Sc (Phty) is the Chief Executive Officer, Independent Living Centre NSW. Robyn has 35 years of experience in the health, disability and ageing service delivery sectors in NSW, Australia as a Physiotherapist, in administration, in teaching and in systemic advocacy. Robyn several systemic and research advisory roles being a member of: EnableNSW Advisory Council; the UNSW Dementia Research Centre; the USyd Consultative Group (Discipline of Occupational Therapy); the AT Collaboration. Robyn has led the Independent Living Centre NSW though significant change, including the need to embrace a web based model as an integrated model of information service delivery on AT.

Mr Andrew Hock Soon CHIA is a Senior Occupational Therapist, Independent Living Centre NSW. He has 6 years of clinical experience in acute and secondary health settings, and 3 years of commercial experience in an assistive technology firm. Having obtained a Diploma in Mechanical Engineering and a Degree in Occupational Therapy, Andrew is currently completing his Masters of Special Education with University of Newcastle in 2013. His interests include the application of high technological solutions to enhance level of independence of people with various conditions. He also has a keen eye on research and development of assistive technology.

*Workshop 8*:

31 Aug 2013 (Saturday), 09:00h – 12:30h

Room 208

**Touch the world – the power of tactile graphics**

*By Harpo SP ZO.O, Poland*

A good picture is worth a thousand words. Concepts that require lengthy textual explanations can be illustrated in other modalities. Students with profound visual impairments deserve similar means to support their education. The goal of this workshop is to equip the participants with knowledge and hands-on experience in the thought process of designing and creating tactile graphics. What is oftentimes neglected is opportunities given to students with visual impairments to interact actively with ready-made images or to create their own designs. If given good quality tools, students will be even more engaged in classroom activities. The participants will be given workshop material and will leave the class not only with knowledge but also with their own creations. All the equipment and other material will be provided.

**Presenters**

Dr Jaroslaw WIAZOWSKI's professional and academic careers given him the opportunity to work with programs for the visually impaired around the world (Poland, Norway, USA, RSA) for the past 16 years. As a certified teacher of the visually impaired, and assistive technology specialist, he has trained presented lectured and published on thee different continents. Apart from his role at Harpo, he currently teaches a class on adaptive technology for VI at the college of special education in Warsaw.

Mr Youn-ho HAHN is the President at Braille Korea. He is a great supporter of Braille literacy. Braille Korea's main focus is on tactile media. Youn is a proponent of tactile graphics and tools that make designing and producing tactile images intuitive and effective.

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*Workshop 9*:

31 Aug 2013 (Saturday), 09:00h – 12:30h

Room 210

**Neuromuscular rehabilitation of hand function: basic and applied research.**

*By Arizona State University, USA*
*ETH Zurich, Switzerland*
*Nanyang Technological University, Singapore*
*Seoul National University, South Korea*
*KAIST, South Korea*

This workshop brings together researchers with complementary expertise on neural control of the hand, biomechanics, robotics, and design of devices for assessment and rehabilitation of hand function. The goal of the workshop is to highlight opportunities for embedding basic research on hand control mechanisms in the design and utilization of biomedical devices for rehabilitation purposes. This goal will be pursued by highlighting current approaches, challenges, and directions for future research. This workshop is aimed at engineers, physiotherapists, occupational therapists, and users of rehabilitation technologies.
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**Presenters**

Dr Marco SANTELLO, School of Biological and Health Systems Engineering, Arizona State University, Tempe, USA is the Director and Harrington Endowed Chair in the School of Biological and Health Systems Engineering at Arizona State University, U.S.A. Dr. Santello is director of the Neural Control of Movement Laboratory whose mission is to characterize the neural mechanisms underlying sensorimotor transformations, control, and learning of hand movements.

Dr Olivier LAMBERCY, Rehabilitation Engineering Laboratory, ETH-Zurich, Switzerland received the M.Sc. degree in microengineering from the Ecole Polytechnique Federale de Lausanne (EPFL), Lausanne, Switzerland in 2005, and the Ph.D. degree in Mechanical Engineering from the National University of Singapore (NUS), Singapore in 2009. During his thesis, he participated to the development and clinical evaluation of pioneering robotic devices for the rehabilitation and assessment of hand function in stroke patients. Since 2009 he has been Research Associate at the Rehabilitation Engineering Lab at ETH Zurich, Switzerland. His principal research projects are on medical and rehabilitation robotics, motor control and human-machine interaction.

Prof Lorenzo MASIA**,** Division of Mechatronic and Design, School of Mechanical and Aerospace Engineering, Nanyang Technological University, Singapore has been working in Rehabilitation Engineering and Mechatronics for almost nine years, and he was trained by established researchers joining teams in academic and research institutions pioneering the Rehabilitation Robotics. Every year he is invited in several symposiums as speaker and involved in scientific committees serving as associate editor (IEEE EMBS, IEEE ICRA, IEEE ICORR) for the most important conferences and sessions on Robot Aided Technology. He won the Best Paper Award for his contribution in the last International Conference on Robotic Rehabilitation (IEEE ICORR 2011).

Prof Kyujin CHO, Biorobotics Laboratory, School of Mechanical and Aerospace Engineering, Seoul National University, Seoul, Korea. Kyu-Jin Cho (M'08) received B.S and M.S. degrees from Seoul National University, Seoul, Korea in 1998 and 2000, respectively, and a Ph.D. degree in mechanical engineering from Massachusetts Institute of Technology in 2007. He was a post-doctoral fellow at Harvard Micro robotics Laboratory until 2008. At present, he is an associate professor of Mechanical and Aerospace Engineering and the director of Biorobotics Laboratory at Seoul National University. He spent a month as a visiting scholar in Biorobotics Institute, Scuola Superiore Sant'Anna, Pisa, Italy, in 2013. His research interests include biologically inspired robotics, novel mechanisms using smart materials, rehabilitation and assistive

robotics, focusing on soft wearable robots

Dr Hyungsoon PARK, Department of Mechanical Engineering, KAIST, Science town, Daejeon, Korea. He received PhD in the Mechanical Engineering department in 2004 from the Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea. He has been worked in the research area of rehabilitation engineering for past ten years. From 2004 until 2009, he worked as a research associate and a research scientist at the Rehabilitation Institute of Chicago, Chicago, IL. He has been a staff scientist at the Rehabilitation Medicine Department, Clinical Center at the National Institutes of Health, Bethesda, MD from 2009 until 2013. He is currently an associate professor at the mechanical engineering department at KAIST. His research interest focuses mainly on application of robotics and control technology on rehabilitation medicine, and biomechanics of human movement.

*Forum 2:*

31 Aug 2013 (Saturday), 09:00h – 12:30h

Exhibition Hall 3 & 4, SDC Pavilion

**Prototype to Product:**
**Journey of Commercializing Assistive and Rehabilitation Technologies**

This forum is specially organized to help the students to bring their SDC projects to the next level - commercialization. The top 3 winners of the Technology and Design Categories shall present their winning project to a panel of experts. The invited experts shall then advise the students the various approaches to bring their innovations from prototypes to commercial products, using the winning projects as real life illustrations.

The Student Design Challenge Award Ceremony shall be held immediately after the Forum.

## Paper Presentations

*Session P1:*

29 Aug 2013 (Thursday) 09:00h – 10:30h

Room 207

**Augmentative and Alternative Communications**

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| P1.1<br>09:00 | **Esophageal speeches modified by the Speech enhancer program**<br><br>**Sriwimon MANOCHIOPINIG, **Panuthat BOONPRAMUK*<br>*Siriraj Hospital, Thailand<br>**Mahidol University , Thailand |
| P1.2<br>09:15 | **Training Software for Esophageal Speech Developed on Game-based PC**<br><br>**Wimok KUEKITTIWONG, *Panuthat BOONPRAMUK, **Sriwimon MANOCHIOPINIG*<br>*King Mongkut's University of Technology Thonburi, Thailand<br>**Mahidol University, Thailand |
| P1.3<br>09:30 | **Using Thai Picture-based System: A Case Study of Thai Children with Cerebral Palsy**<br><br>**Sarinya CHOMPOOBUTR, *Monthika BORIBOON, *Wantanee PHANTACHAT, **Puttachart POTIBAL*<br>*National Electronics and Computer Technology Center, Thailand<br>**Kasetsart University , Thailand |

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| P1.4<br>09:45 | **Icon Sequences of Thai Picture-Based Communication System**<br><br>**Puttachart POTIBAL, **Sarinya Chompoobutr, **Wantanee PHANTACHAT, **Monthika BORIBOON*<br>*Kasetsart University, Thailand<br>**National Electronics and Computer Technology Center, Thailand |
| P1.5<br>10:00 | **Are AAC Apps Accessible for People with Complex Communication Disabilities?**<br><br>*Ming Chung CHEN, Long Sheng LI, Chien Chuan KO*<br>National Chiayi University, Taiwan |
| P1.6<br>10:15 | **An Automatic Natural Language Sentence Generation from Images**<br><br>*Worasa LIMPANADUSADEE, Proadpran PUNYABUKKANA, Atiwong SUCHATO*<br>Chulalongkorn University, Thailand |

*Session P2:*

29 Aug 2013 (Thursday) 09:00h – 10:30h

Room 208

**Rehabilitation Studies**

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| P2.1<br>09:00 | **Finite Element Modeling & Validation of a Four-Bar Linkage Prosthetic Knee under Static and Cyclic Strength Tests**<br><br>*Sittikorn LAPAPONG, Sedthawatt SUCHARITPWATSKUL, Narong PITAKSAPSIN, Chadchai SRISURANGKUL, Sarawut LERSPALUNGSANTI, Rattanasuda NAEWNGERNDEE*<br>National Metal and Materials Technology Center, Thailand |

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| P2.2<br>09:15 | **Investigation of the Motion Mimicking Ability in Healthy Subjects during Simple and Complex Tasks**<br><br>*Edwin Boon-Wee NEO, Jin-Huat LOW, Gokula KRISHNAN.R, Luis Carlos Hernandez BARRAZA, Chen-Hua YEOW*<br>National University of Singapore, Singapore |
| P2.3<br>09:30 | **The Second phase of clinical testing Polycentric Four-Bar linkage Knee prosthesis in Thai Amputees**<br><br>**Jagkapong PIPITPUKDEE, **Daranee SUVAPUN, **Piyavit SORACHAIMETHA, **Tawatchai JUNSA-ARD, **Decha SITTAKORNKOVIT,**Pornsuree ONMANEE, ***Pete RIMCHALA, ***Soraj SUKHONTHAN*<br>*National Electronic and Computer Technology Center, Thailand<br>**Sirindhorn National Medical Rehabilitation Centre, Thailand<br>***Halcyon Metal Ltd, Thailand |
| P2.4<br>09:45 | **Mild Anatomical Leg Length Discrepancy and Musculoskeletal Pathomechanics**<br><br>*Chien-Hung CHEN, Liang-Wey CHANG, Chu-Sheng HSIAO*<br>National Taiwan University, Taiwan |
| P2.5<br>10:00 | **Measurements of lumbar spine kinematics in sitting postures using accelerometers : A Preliminary study**<br><br>**Siti Ruzita MAHMOOD, *Mohammed Rafiq ABDUL KADIR, **Devinder Kau Ajit SINGH, ***Raymond YW LEE*<br>*Universiti Teknologi Malaysia, Malaysia<br>**Universiti Kebangsaan Malaysia, Malaysia<br>***University of Roehamptom, United Kingdom |

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| P2.6<br><br>10:15 | **Two Different Kinetic Chains of Sling Exercise Therapy for Vastus Medialis Oblique Muscle**<br><br>*Wei-Syuan HUANG, Wen-Dien CHANG*<br>China Medical University, Taiwan |

*Session P3:*

29 Aug 2013 (Thursday) 11:00h – 12:30h

Room 207

**ICT and Computer Access**

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| P3.1<br><br>11:00 | **Public procurement and ICT accessibility**<br><br>**Gunela ASTBRINK, **William TIBBEN*<br>*GSA InfoComm, Australia<br>**University of Wollongong, Australia |
| P3.2<br><br>11:15 | **Feasibility study of PDF based digital textbooks for university students with difficulty to handle printed textbooks**<br><br>**Hidehisa OKU, *Kayoko MATSUBARA, **Masayuki BOOKA*<br>*Kobe Gakuin University, Japan<br>**Hiroshima International University, Japan |
| P3.3<br><br>11:30 | **My Act: an Automatic Daily Caloric Estimation Based on Physical Activity Data using Smart Phones**<br><br>*Jatuporn CHINRUNGRUENG, Seksun SARTSATIT*<br>National Electronic and Computer Technology Center, Thailand |

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| P3.4<br>11:45 | **Is Second Life Accessible for People with Severe Physical Disabilities? Results from Two Experiments**<br><br>**Ming Chung CHEN, *Yu Tang CHEN, *Chien Chuan KO, **Ting Fang WU*<br>*National Chiayi University, Taiwan<br>**National Taiwan Normal University, Taiwan |
| P3.5<br>12:00 | **Field testing of SOSHeart: A mobile app to call for help in emergency**<br><br>*Ponraj DURAIRAJ, Zhiqiang LUO*<br>Nanyang Polytechnic, Singapore |
| P3.6<br>12:15 | **Development of a Portable Alternative Computer Access APP for the Physically Disabled**<br><br>*Chang Geol KIM, Un Heon JANG, Byung-Seop SONG*<br>Daegu University, Korea |

*Session P4:*

29 Aug 2013 (Thursday) 11:00h – 12:30h

Room 208

**Rehabilitation Systems**

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| P4.1<br>11:00 | **Configurable Augmented Virtual Reality Rehabilitation System for Upper Limb Disability**<br><br>*The-Kiet LU, Edwin FOO, Bala S RAJARATNAM, Kannappan IYNKARAN*<br>Nanyang Polytechnic, Singapore |

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| P4.2<br><br>11:15 | **Real-time Hybrid SSSEP-MI based Brain Computer Interface System for Upper Limb Rehabilitation**<br><br>*Janipa SAETANG, Yunyong PUNSAWAD, Yodchanan WONGSAWAT*<br>Mahidol University, Thailand |
| P4.3<br><br>11:30 | **Real time EEG-based Pain Control System**<br><br>*Nattakul SAITHONG, Waraporn POOLPOEM, Pradkij PANAVARANAN, Yodchanan WONGSAWAT*<br>Mahidol University, Thailand |
| P4.4<br><br>11:45 | **Active impedance controlled supporter for walking rehabilitation robot**<br><br>*Nakrob WANICHNUKHOX, Thavida MANEEWARN, Szathys SONGSCHON*<br>King Mongkut's University of Technology Thonburi, Thailand |
| P4.5<br><br>12:00 | **Development of Lumbar Stabilized Biofeedback (LBS) Device for Low Back Pain Patients**<br><br>*Kittichai THARAWADEEPIMUK, Nida VONGSAVAT, Yodchanan WONGSAWAT*<br>Mahidol University, Thailand |
| P4.6<br><br>12:15 | **Development of a Robot Remote Support System for Student with Health Impairment**<br><br>*Gun Jae RYU, Chang Geol KIM, Jeong Bae KANG, Byeong Seop SONG*<br>Daegu University, South Korea |

*Session P5:*

30 Aug 2013 (Friday) 09:00h – 10:15h

Room 207

**Neuro-Rehabilitation Technology**

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| P5.1<br>09:00 | **Measuring Activities of Daily Living of Stroke Patients using Integrated Upper Limb Measurement System and ADL Measurement Table**<br><br>*Albert CAUSO, Song Huat YEO, I-Ming CHEN*<br>Nanyang Technological University, Singapore |
| P5.2<br>09:15 | **Virtual Reality Balance Games to Improve Lower Limb Function Among Adults with Chonic Stroke**<br><br>*Devinder Kaur Ajit SINGH, Nor Azlin MOHD NORDIN, Noor Azah AZIZ, Siti Norfadilah Abu ZARIM, Beng Kooi LIM, Li Ching SOH*<br>Universiti Kebangsaan Malaysia, Malaysia |
| P5.3<br>09:30 | **Automatic Removal of Eye-blink Artifacts For Neurofeedback Training Systems**<br><br>*Suwicha JIRAYUCHAROENSAK, Pasin ISRASENA*<br>National Electronic and Computer Technology Center, Thailand |
| P5.4<br>09:45 | **BCI-based Neurorehabilitation and Prediction System for Stroke Patients**<br><br>*Dollaporn ANOPAS, Massamon HORAPONG, Yodchanan WONGSAWAT*<br>Mahidol University, Thailand |

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| P5.5<br>10:00 | **Brain-Compute Interface based Alzheimer Early Detection System**<br><br>*Preechapawan TRIPONYUWASIN, Traisak YAMSA-ARD, Yodchanan WONGSAWAT*<br>Mahidol University, Thailand |
| P5.6<br>10:15 | **Development of a Supine Gait Training Device for Stroke Rehabilitation**<br><br>*Fang Ming LIM, Ruyi FOONG, Haoyong YU*<br>National University of Singapore, Singapore |

*Session P6:*

30 Aug 2013 (Friday) 09:00h – 10:15h

Room 208

**Social Issues & Accessibility**

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| P6.1<br>09:00 | **Informing the Australian Government on AT policy: ARATA's experience**<br><br>*Emma FRIESEN, Lloyd WALKER, Natasha LAYTON, Gunela ASTBRINK, Michael SUMMERS, Desleigh DE JONGE*<br>Australian Rehabilitation and Assistive Technology Association, Australia |
| P6.2<br>09:15 | **From an idea to a research project: a case study of novice practitioner research in south western Sydney**<br><br>**Emma FRIESEN, **Kate MARGETSON, **Sarah CARMAN,*** Kate SHORT, #Elizabeth COMINO*<br>*Primary and Community Health Research Unit (PCHU), Australia<br>**Liverpool Hospital, Australia |

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| | ***University of Sydney, Australia<br>#University of New South Wales, Australia |
| P6.3<br>09:30 | **Democratize Universal Design**<br><br>*Sami BEN FRADJ*<br>Kobe Design University, Japan |
| P6.4<br>09:45 | **Living with persons with disabilities :a private story for accessible, inclusive, sustainable world**<br><br>*Toru FURUI, Masayo FURUI, Kiyoharu SHIRAISHI*<br>Osaka Kawasaki Rehabilitation University, Japan |
| Po6.1<br>10:00 | **Flying Wheelchair Project 2009-2013 Japan-Korea and Taiwan International Voluntary Activity in Thailand**<br><br>*Hisaichi OHNABE*<br>Niigata University of Health and Welfare, Japan |
| Po6.2<br>10:02 | **A Proposal for Improvement of the Public Support System about New Communication Aids with IT&UD**<br><br>**Tamotsu IMURA, **Mamoru IWABUCHI, ***Kazuyuki ITOH*<br>*Chubu Gakuin University, Japan<br>**The University of Tokyo, Japan<br>***National Rehabilitation Center, Japan |
| Po6.3<br>10:04 | **Effects of Use of Smart Phone on Musculoskeletal Pain (Focusing on university students in Korea)**<br><br>**Hee young YEUM, **Han seul SON, **Rae jung KIM, **Yoon jung CHOI, **Yi jin SONG, **Song yi LIM*<br>*The Korea Society of Assistive Technology, South Korea<br>**Baekseok University, South Korea |

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| Po6.4<br><br>10:06 | **Development of Digital Log and Analysis of its Records in Centers for the Disabled**<br><br>*Jungbae KANG*<br>The Research Institute for Special Education & Rehabilitation Science, South Korea |
| Po6.5<br><br>10:08 | **The Impact of Assistive Technology on Occupational Performance and Quality of Life Among Employee with Disability**<br><br>*Hee young YEUM*<br>The Korea Society of Assistive Technology, South Korea |
| Po6.6<br><br>10:10 | **Effects of Occupational Therapy knowledge document on caregivers of person with swallowing difficulty**<br><br>*Pornsawan POSAWANG*<br>Sirindhorn National Medical Rehabilitation Centre, Thailand |

*Session P7:*

30 Aug 2013 (Friday) 10:45h – 12:45h

Room 207

**Rehabilitation Technology**

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| P7.1<br><br>10:45 | **Design of a thumb exoskeleton for hand rehabilitation**<br><br>*Olivier LAMBERCY, David SCHODER, Sven ZWICKER, Roger GASSERT*<br>ETH Zurich, Switzerland |

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| P7.2<br><br>11:00 | **Application of Inertial Measurement Units for Angular Motion Detection**<br><br>**Tossaphon JAYSRICHAI, *Areerat SUPUTTITADA, *Watcharapong KHOVIDHUNGIJ, **Theerasak CHANWIMALUEANG*<br>*Chulalongkorn University, Thailand<br>**Srinakharinwirot University, Thailand |
| P7.3<br><br>11:15 | **The Development of Graphene-based Flex Sensors using Printed Electronics for Physical Rehabilitation and Assistive Applications**<br><br>**Surapa THIEMJARUS, *Patiya PASAKON, *Chakrit SRIPRACHUABWONG, *Tanom LOMAS, *Adisorn TUANTRANON, **Atis ATISET, **Rungsemund CHUNVICHIT*<br>*National Electronics and Computer Technology Center, Thailand<br>**Thanmmasat University Bangkok, Thailand |
| P7.4<br><br>11:30 | **Effects of Window Size and Contraction Types on the Stationarity of Biceps Brachii Muscle EMG Signals**<br><br>**Sirinee THONGPANJA, */** Angkoon PHINYOMARK, *Franck QUAINE, **Yann LAURILLAU, *Booncharoen WONGKITTISUKSA, *Chusak LIMSAKUL,*Pornchai PHUKPATTARANONT*<br>*Prince of Songkhla University , Thailand<br>**University Joseph Fourier, Grenoble, France |

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| P7.5<br>11:45 | **Multi-step Prediction and Filtering of Pathological Tremor for FES Applications**<br><br>**Sivanagaraja TATINATI, *Kalyana Chakravarthy VELUVOLU, **Wei Tech ANG*<br>*Kyungpook National University, South Korea<br>** Nanyang Technological University, Singapore |
| P7.6<br>12:00 | **Respiratory Rate measurements using a Tri-Axial Accelerometer among Older Adults**<br><br>*Nor Najwatul Akmal AB RAHMAN, Devinder Kaur Ajit SINGH, Raymond YW LEE*<br>University Kebangsaan Malaysia |
| P7.7<br>12:15 | **Teaching of the Design of Rehabilitation Technology to Engineering Students**<br><br>*Siew Bee Iris NG, Andi Sudjana PUTRA, Ian GIBSON*<br>National University Of Singapore |
| Po7.1<br>12:30 | **In-socket Sensor for Transfemoral Prosthesis**<br><br>*Kenneth Yu Shen TAN, Amr M. EL-SAYED, Nur Azah HAMZAID*<br>University of Malaya, Malaysia |
| Po7.2<br>12:32 | **Identification of Optimal Prosthetic Knee Control Parameter at Each Gait Sub-phase using Cyclograms and Neural Network**<br><br>*Nor Elleeiana MOHD SYAH, Nur Azah Hamzaid, Noor Azuan ABU OSMAN*<br>University of Malaya, Malaysia |

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| Po7.3<br><br>12:34 | **HCI Application for Aiding Children with Mental Disorders**<br><br>**Surapa THIEMJARUS, **Sweta DWIVEDI*<br>*National Electronic and Computer Technology Center, Thailand<br>**Thammasat University, Thailand |
| Po7.4<br><br>12:36 | **Development of Posture Adjustment Supporting Device of the Head and Neck for Swallowing Rehabilitation**<br><br>*Junichi KATO, **Satoru MAEDA,***Takumi HATTORI,<br>*Hyogo Rehabilitation Center at Nishi-Harima, Japan<br>**Konan Medical Laboratory, Japan<br>***Hiroshima Institute of Technology, Japan |
| Po7.5<br><br>12:38 | **To evaluate effectiveness of indigenous FES in stroke patients**<br><br>*Saikrishnan VAISRAVANATH, *Aditi BHANDIWAD, **M SHIVAKUMAR<br>*JSS College of Physiotherapy, JSS Hospital Mysore, India<br>**GSSS Institute of Technology for Women, India |
| Po7.6<br><br>12:40 | **Provision of Attention Concentration Improvement Program though a Tele-presence Robot System**<br><br>Chang Geol KIM, Mi Young JIN, Yun Hee SHIN, Hyo Shin LEE<br>Daegu University, Korea |

*Session P8:*

30 Aug 2013 (Friday) 10:45h – 12:45h

Room 208

**Assistive Technology**

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| P8.1<br>10:45 | **Studies on Appropriate Everyday Technology for the Persons Who are Mutual Cognitive Impairment**<br><br>**Jiro SAGARA, **Rumi TANEMURA, **Kazue NODA, **Toru NAGAO*<br>*Kobe Design University, Japan<br>**Kobe University, Japan |
| P8.2<br>11:00 | **A reflective infrared Tongue-controlled Assistive Tool (TAT) for the disabled to control the environment**<br><br>*Teck Soon ONG, Jeong Hoon LIM*<br>Ngee Ann Polytechnic, Singapore |
| P8.3<br>11:15 | **Design and Development of Hip Abductor Brace (HAB) to Prevent Dislocation After Hip Replacement Surgery**<br><br>*Kittichai THARAWADEEPIMUK, Nida VONGSAVAT, Yodchanan WONGSAWAT*<br>Mahidol University, Thailand |
| P8.4<br>11:30 | **iSonar: An Obstacle Warning Device for The Blind**<br><br>*Surapol VORAPATRATORN, Kowit NAMBUNMEE*<br>Mae Fah Luang University, Thailand |

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| P8.5<br><br>11:45 | **Creating Tactile Images - Decision Making Process**<br><br>*Jaroslaw WIAZOWSKI*<br>Harpo Sp z o.o, Poland |
| P8.6<br><br>12:00 | **CE Marking on a Thai Hearing Aid**<br><br>**Hiranya SRITART, *Pasin ISRASENA, *Anukool NOYMAI, **Kraison AUNCHALEEVARAPAN, ***Suchanya RUENWICHA*<br>*National Electronic and Computer Technology Center, Thailand<br>**Electrical & Electronic Products Testing Center, Thailand<br>***Q-time Consulting Services Co Ltd, Thailand |
| P8.7<br><br>12:15 | **Enhancement of auditory to visual sensory substitution training via brain-computer interface**<br><br>*Waraporn POOLPOEM, Yodchanan WONGSAWAT*<br>Mahidol University, Thailand |
| Po8.1<br><br>12:30 | **Voice Controlled Guide Phone for Blind People**<br><br>*Kun-I CHIU, Cing_jhu JHUANG, Yu-Hsuan LI*<br>Minghsin University of Science and Technology, Taiwan |
| Po8.2<br><br>12:32 | **Development of a Walking Assistance System for the Visually Disabled with Weak Muscular Strength of the Legs**<br><br>**Jin Hyun LEE, **Chang Geol KIM*<br>*Daegu Assistive Technology Center, South Korea<br>**Daegu University, Korea |

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| Po8.3<br><br>12:34 | **The Effect of the Collaborative AAC Team Intervention for Student with Severe Disability in the Elementary School**<br><br>*Kyung Yang KIM, Seon Kyoung HAN, Eun Hye PARK*<br>Ewha Womans University, South Korea |

*Session P9:*

31 Aug 2013 (Saturday) 11:00h – 12:15h

Room 207

**Special Education**

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|---|---|
| P9.1<br><br>11:00 | **Relationship of IQ levels toward initial response in robotic intervention for children with autism**<br><br>**Luthffi Idzhar ISMAIL, *Hanafiah YUSSOF, *Fazah Akhtar HANAPIAH, **Nur Ismarrubie ZAHARI, *Syamimi SHAMSUDDIN*<br>*Universiti Teknologi MARA, Malaysia<br>**Universiti Putra Malaysia, Malaysia |
| P9.2<br><br>11:15 | **A Gesture-based Virtual Art Program for Children with Severe Impairments – Development and Pilot Study**<br><br>**Laura DIMENT, *David HOBBS, **Tom CHAU*<br>**Flinders University, Australia*<br>**Holland Bloorview Kids Rehabilitation Hospital, Australia |

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| P9.3<br><br>11:30 | **The maintenance effect of Chinese text entry training for students with learning disabilities: A case report**<br><br>**Ting-Fang WU, *Hui-Shan LO, **Ming-Chung CHEN*<br>*National Taiwan Normal University, Taiwan<br>**National Chiayi University, Taiwan |
| P9.4<br><br>11:45 | **Do They Need Specific Language Training Content? Results of Core Vocabulary Investigation from Children with/without Intellectual disability in Taiwan**<br><br>*Ming Chung CHEN, Ya Zhen CHEN, Cheng-Chien CHEN*<br>National Chiayi University, Taiwan |
| P9.5<br><br>12:00 | **Addressing Children's Handwriting and Visual Perceptual Difficulties Using iPad Applications In Occupational Therapy Practice**<br><br>*Supawadee LEE*<br>Long Island University, USA |
| P9.6<br><br>12:15 | **An Investigation of Aided Language Stimulation in a Group Teaching Format: Does it work in a Real Class?**<br><br>**Ya-Ping WU, *Ming-Chung CHEN, **Chun-Han CHIANG, *I-Chun KUAN*<br>*National Chiayi University, Taiwan<br>**National Taiwan Normal University, Taiwan |

## Student Design Challenge @ i-CREATe 2013

The Student Design Challenge provides a platform for students to compete with their creative and innovative solutions to improve the quality of living of elderly, people with disability and their caregivers.

The theme for Student Design Challenge 2013 is
***Learning, Living & Working with my Assistive & Rehabilitation Technology (A&RT)***

There are two categories:

- **Technology Category**
  Student entries are expected to apply principles in engineering and information technology to design and implement Assistive & Rehabilitative Technology solutions to address the issues / problems faced by the needy, their caregivers and clinicians. A functional prototype is mandatory to demonstrate the proposed solution.

- **Design Category**
  Student entries are expected to apply User-Centric Design process to develop solutions for assistive or rehabilitation applications. The proposed solutions need not have technological components but must be technically feasible. An illustration, in the form of drawing, 3D model, video, animation or functional prototype, is mandatory to illustrate the proposed idea.

**Judging**

There are two rounds of judging:

*Prototype Demonstration*

| | |
|---|---|
| Venue: | SDC Pavilion, KINTEX 1, Exhibition Hall 3 & 4 |
| Date / Time: | 28 August 2013, 14:30h – 18:00h |
| Format: | 5 min explanation & prototype demonstration, followed by 2 min Q&A |

*Oral Presentation*

Venue: SDC Pavilion, KINTEX 1, Exhibition Hall 3 & 4
Date / Time: 29 August 2013, 08:30h – 12:30h
Format: 5 min on-stage presentation, followed by 2 min Q&A

A panel of international judges of different professional backgrounds will be invited to judge on the projects. All judges' score based on the judging criteria will carry equal weightage and decision of the winners need not be unanimous.

**Poster & Prototype Display**

All teams are required to displays their poster and prototype at the SDC Pavilion, Exhibition Hall 3 & 4, throughout the convention duration**.** All students must be present during judging and at their respective booth during VIP visit from **14:30h - 16:30h, 29 Aug 2013**.

**Awards**

The judges will select the top three teams and up to two teams that deserve merit in each category:

- *Champion* – USD 1,400.00, a trophy and certificates for all members.
- *1st Runner-up* – USD 700.00, a trophy and certificates for all members.
- *2nd Runner-up* – USD 350.00, a trophy and certificates for all members.
- *Merit Award* (up to two) – a trophy and certificates for all members.

➢ *Best Presentation Award* – certificates for all members.
The award will be decided by the panel of judges based on the presentation part of the judging criteria.

➢ *Best Poster Award* – certificates for all members.
The award will be decided by the panel of judges based on the design and comprehensiveness of the poster.

- *Best Prototype (Technology) / Illustration (Design) Award* – certificates for all members.
  The award will be decided by the panel of judges based on the quality of the prototype (Technology) or illustration (Design).

- *Peers' Choice Award* – certificates for all members.
  The award is to be decided by the SDC participants. Each team is allowed to cast one vote on the most deserving team entry but cannot vote for their team. The votes have to be casted at the end of the presentation session.

- *Public's Choice Award* – certificates for all members.
  The award is to be decided by the public visiting the exhibition. Upon registering for the conference, each visitor will be given a voting sheet where they have to complete and drop into the voting box at the registration booth after visiting the SDC booths.

- *Exhibitors' Choice Award* – certificate for all members.
  The award is to be decided by the exhibitors of Sendex 2013. The voting sheet will be provided on the first day of exhibition. A representative of each exhibiting organization will vote for the most deserving team.

The result of the top 3 winners from each category will be announced at the Gala Dinner on 29 Aug 2013. The other awards will be announced after the SDC Forum on 31 Aug 2013 at the SDC Pavilion, Exhibition Hall 3 & 4.

**Design Category Teams**

D01 – The Bus Application for Visually Impaired People or Crippled People
*Joon ho Yoon, Sung Uhn Kim, Jin Yung Yang, Tae Gyeong Kim*
*Hanyang University, Korea*

D02 – Light of Life
*Goh Chung Sern, Janice Kerena Tan Sock Kheng, Amutha K P Subramaniam*
*Nanyang Polytechnic, Singapore*

D03 – Jodjum (Braille Note taker and keyboard)
*Atip Rientsuvong, Pattaravit Kitjedtanee*
*Mahidol University, Thailand*

D04 – Braille Key Cover
*Ho-Jin Choi, Won-Kyoung Jang*
*Sangmyung University /Korea Design Membership, South Korea*

D05 – Singapore Wheelchair Access (Mobile Maps) Navigator
*Nur Farhanah Bte Ishak, Wong Kai Chong, Michaella Lucero Palacol, Yee Hui Ping ITE College East, Singapore*

D06 – Stretchair (stretcher + wheelchair)
*Do-Hyung Kim*
*Kookmin Graduate School of Design, South Korea*

D07 – THE NOTE PROJECT - NOTE (n) & NOTE (vt)
*Wiriya Mana-anantakul, Kittikorn Worawittayakarn*
*King Mongkut's University of Technology Thonburi, Thailand*

D08 – CHELP
*Young Ye Cho, Ye Rin Lee*
*Catholic University of Dae-gu, South Korea*

D09 – Sliding Toilet Seat with Swivel Grab Bars for the Elderly
*Muhammad Fariqh, Muhammad Izzat, Muhammad Alim, Muhammad Zulhilman*
*ITE College East, Singapore*

D10 – Home-Auto Lift System (HALS)
*Pastaporn Suasa, Kornnapat, Lalita Pongpairoj Yankoses*
*Thammasat University, Thailand*

D11 – Up & Down Moving Chair
*Lee Jin Young, Jo Min Jeong*
*Mokwon University, South Korea*

D12 – QikRehab - Innovative Hand Rehabilitation Device

*Chan Chun Chiang, Alfred Chua, Tan Lee Chaw*
*National University of Singapore, Singapore*

D13 – Donut 420
*Lau Kai Cheong Tony, Ko Wai Nam, Tsui Wai Ching Sarah, Law Yue Shan, Chan Ching Sheung*
*Hong Kong Polytechnic University, Hong Kong*

D14 – Xylophone Cup
*Choi Soon Sik*
*Dongse University, South Korea*

D15 – FreeMo
*Soo Woei Perng*
*Ngee Ann Polytechnic, Singapore*

D16 – Up & Down
*Doeun Kwon*
*Mokwon University, South Korea*

D17 – The Bumble Bee Bed
*Goh Chung Sern, Janice Kerena Tan Sock Kheng, Amutha K P Subramaniam*
*Nanyang Polytechnic, Singapore*

D18 – One Point
*Da-Young Lee*
*University Of Seoul, South Korea*

D19 – Pill Crusher
*Lee Wee Poh, Dominic Pereira, Nicholas Chong Jun Wei, Daeng Nur Hidayah*
*ITE College Central, Singapore*

D20 - KLA: Reading and Writing Practicing Media for LD 6-9 years old children
*Kanatip Janvipas, Chidawan Kimawongdachai, Seksiri Reangthonglang*
*King Mongkut's University of Technology Thonburi, Thailand*

D21 – Wheelchair-Purpose Storage Device
*Sunjoo Kang, KwangO Cho, SangWoo Yoon, Sungkyeong Kim, SukJae Im*

*Chonnam University /Engineering, South Korea*

D22 – Nectar (Kinect as Stroke Rehabilitation)
*Kristanto Agung Nugroho, Muhammad Afnaan Subhi, Hasna Khairunnisa, Ardirani Rensyta*
*Universitas Gadjah Mada, Indonesia*

D23 - X-RIGHT
*Chua RenJun, Hiu Meng Xiong, Henrietta Goh Mei Zi, Kanageswari D/O Muthukumar*
*Nanyang Polytechnic, Singapore*

D24 – mySMART Leg
*Amr Mohammed El-Sayed, Saiful Syazwan Bin Mohd Fadzil, Victor Kean Shern Phng, Nur Hidayah Binti Mohd Yusof*
*University of Malaya, Kuala Lumpur, Malaysia*

D25 – Pendulum Crutch / Crutch
*Ki Yong Kim*
*Kook-min University, South Korea*

D26 – KD-AD: Kid's Physical Disable Art Develop Skill Center
*Poowanut Tippituck*
*King Mongkut's University, Thailand*

**Technology Category Teams**

T01 – A-Live Application Mindwave EEG Hardware
*Sung Gwan Kim, Seo Seung Hun, Lee Kyung Yong, Kim Su Yeon, Park Gwi Rang*
*Yonsei University, South Korea*

T02 – BCI-based Neurorehabilitation System for Stroke Patients
*Jetsada Arnin, Dollaporn Anopas, Preechapawan Triponyuwasin, Traisak Yamsaart*
*Mahidol University, Thailand*

T03 – Design and Development of Novel Robotic Arm Brace

*Yeoh Jo-Ern, Muhammad Muslimin Bin Mohd Samat, Max Tay Jin Ho, Chia Wen Feng*
*Singapore Polytechnic, Singapore*

T04 – ANTASENA (GSM-Based Locator Bracelet)
*Edgina Tanya Kemala, Dyah Yunitasari, Faris Fadhil Utomo, Hendy Indrajaya*
*Universitas Gadjah Mada, Indonesia*

T05 – Wheelchair Vacuum Cleaner
*Soyoung Choi*
*Hanyoung Foreign Language High School, Korea*

T06 – Ankle-Foot Passive Motion Device for Footdrop
*Kittichai Tharawadeepimuk, Nida Vongsavat, Sitthichai Iampetch*
*Mahidol University, Thailand*

T07 – The small moving aid machine, using indoors: Ball-Chair
*Kim Woo Yong, Oh Myungsin, Kim Donghyun, Kim Jeonghyun*
*Seoul National University of Science and Technology, South Korea*

T08 – Kinect Virtual Art Program (KVAP)
*Laura Diment*
*Finders University, Australia*

T09 – Smart Sensor Hand Exerciser Using Application for People with Stroke
*Seon-Hye Bang, Ji Won Kwak, Do-Young Han, Kwan-Hee Han*
*Soonchunhyang University, South Korea*

T10 – SOSHeart - A Mobile App to Save Your Heart
*Lim Kok Meng, Abdul Rahman Bin Zainal Abdin*
*Nanyang Polytechnic, Singapore*

T11 – Intelligent Monitoring and Talking Module (IMTM)
*Wittawat Boonleelakul*
*Kasetsart University, Thailand*

T12 – Portable Multifunction Shower Wheelchair (PMSW)
*Brian Byunghyun Kang, Gyuhan Cho, Haemin Lee*
*Seoul National University / QoLT CATCH, Korea*

T13 –Minds On
*Aw Jeng Kit, Jolene Tan Ling Ee, Lau Xin Wei, Ang Wei Xiang*
*ITE College Central, Singapore*

T14 – Convertible Umbrella for Wheelchair (IRIS2)
*Joon Beom Kim, Jae Hong Lee, Dong Hun Lee, Sang Yoon Lee, Hyeong Gyun Cheonng, Dong Hyun Kim*
*Seoul National University, South Korea*

T15 – Portable Auto-Night Light for Restroom
*Loi DanRui, Siti Alwiah Bte Sapuan, Shariffah Faddillah Bte S. A. A, M Vijaya Laksshme*
*ITE College Central, Singapore*

T16 – Compact Rehabilitation Robot
*Khor Kang Xiang, Patrick Chin Jun Hua, Fu Suan Kian*
*Universiti Teknologi Malaysia, Malaysia*

T17 – Designing an Effective Wheel Chair Table Mount
*Park Taewoong, Choi Minsik, Park Yujung, In Hyunki*
*Seoul National University / QoLT CATCH, South Korea*

T18 – Measurement and Analysis System of the Knee Joint Motion in Gait Evaluation for Rehabilitation Medicine
*Neramitr Chirakanphaisarn, Karnnapat Areesakunsuk*
*Mahidol University, Thailand*

T19 – Wearable Rehabilitation Device for the Treatment of Genu Recurvatum
*Sri Gowtham Thakku*
*National University of Singapore, Singapore*

T20 – The Brilliant Controller Using Electronic Wheelchair
*Lee seung-hyun, Joe young-rok, Park cheol-jun, Kang ho-min*
*Jeonbuk National University, South Korea*

T21 – ERRA (Ergonomic Rehabilitation Robotic Arm)
*Faisal Abdillah Kahfi, Widhi Yoga Saryanto, Aqmarina Riyaningrum, Ririh Rahma Ratinghayu*

*Universitas Gadjah Mada, Indonesia*

T22 – iCare Personal Emergency Alert System
*Sujena Goh Shu Mei, Rachel Tan Hui Ling, Kenneth Chua Cheng En, Lau Jun Xiang*
*ITE College Central, Singapore*

T23 – Wearable Robot for Assisting Elbow Movement
*Si-Haeng Lee, Seong-Yong Kim, Hak-Yong Kim, Chan-Do Park*
*Seoul National University of Science and Technology, South Korea*

T24 – D.A.R.Lins (Dual Assistive & Rehabilitative Linkages) for the Elderly and Disabled
*Tan Yue Ting Daphne, Tan Li Kiat Rebecca, Zheng Hui Yun Vera*
*Temasek Polytechnic, Singapore*

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