i-CREATe 2023

The 16th International Convention
on Rehabilitation Engineering and Assistive Technology

Towards Sustainable and Inclusive Society

8-11 August 2023

Thailand Science Park (TSP)
National Science and Technology Development Agency (NSTDA)
Pathum Thani, Thailand

i-CREATe 2023

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on Rehabilitation Engineering and Assistive Technology

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Thailand Science Park (TSP)
National Science and Technology Development Agency (NSTDA)
Pathum Thani, Thailand

Local organized by

Supported by

Sponsored by

Guest of Honor

Her Royal Highness
Princess Maha Chakri Sirindhorn
Kingdom of Thailand

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WELCOME

We are pleased to invite you to the 16th International Convention on Rehabilitation Engineering and Assistive Technology (i-CREATe 2023) which will be held during 8-11 August 2023 at Thailand Science Park (TSP), National and Technology Development Agency (NSTDA) in Pathum Thani, Thailand.

Into its 16th year, i-CREATe continues to provide an international platform of conference, Global Student Innovation Challenge, and exhibition featuring innovative technology, equipment, applications, techniques, and materials applied in the field of Assistive and Rehabilitative Technology. It is also a stage for technical exchanges to share ideas and best practices in the disabilities field from across the countries. This conference will include a range of workshops on the types of assistive technologies available for use in education and employment. There will also be presentations by persons with disabilities using technologies in their daily lives, including education, training and employment.

We are very honored to have the presence of Her Royal Highness Princess Maha Chakri Sirindhorn for the 15th consecutive year on 10 August 2023.

We are looking forward to meeting you all in Thailand at i-CREATe 2023.

Prof. Dr. Pairash Thajchayapong
General Chair of i-CREATe 2023 conference
Secretary General
The Information Technology Foundation
under the Initiative of H.R.H. Princess Maha Chakri Sirindhorn

GENERAL INFORMATION

Conference Venue

130, 132 Thailand Science Park, Phahonyothin Road, Khlong Nueng, Khlong Luang, Pathum Thani 12120, Thailand

- Thailand Science Park Convention Center (TSPCC/CC) (Building 14)
- Sirindhorn Science Home (SSH) (Building 18)

About the Thailand Science Park Convention Center (TSPCC)

The Thailand Science Park Convention Center (TSPCC) is planned to organize activities, conferences, trainings, seminars, exhibitions and showcases. On the area of 30,000 sq.m., there are modern well-equipped seminar room of various sizes, open-air area for activities, a grand exhibition hall, an auditorium with 380 seats, food courts, restaurants and retailing shops. TSPCC offers various meeting rooms to both public and private institutes. Spacious meeting rooms, an auditorium and lecture rooms are available for events. In addition, regular meeting.

About the Sirindhorn Science Home (SSH)

Sirindhorn Science Home or SSH is a unified learning center aimed at encouraging young people to pursue skills and knowledge in science and technology. Sirindhorn Science Home now plays a vital role in encouraging more children and youth in Thailand to pursue higher education in science and technology.

Registration Desk Opening Hours

8 August 2023

Reception Desk for Technical Tours at Lobby, Asawin Hotel, 08:15 – 08:45 hrs.
Reception Desk for Exhibition Setting at Grand Hall, CC, 08:00 – 17:00 hrs.

9 August 2023

Reception Desk for Transportation at Lobby, Aswain Hotel, 08:00 – 08:30 hrs.
Reception Desk for Conference Functions at Foyer, SSH, 08:00 – 17:00 hrs.
Reception Desk for Exhibition at Grand Hall, CC, 08:00 – 17:00 hrs.

10 August 2023

Reception Desk for Transportation at Lobby, Aswin Hotel, 07:00 – 07:30 hrs.
Reception Desk for Conference Functions at Foyer, SSH, 07:00 – 12:30 hrs.
Reception Desk for Opening Ceremony and Antigen Test Kit Screening at Foyer, SSH, 07:00 – 12:30 hrs.
Reception Desk for Cocktail Dinner at Event Square on the 2nd floor, CC, 17:00 -17:45 hrs.

11 August 2023

Reception Desk for Transportation at Lobby, Aswain Hotel, 08:00 – 08:30 hrs.
Reception Desk for Conference Functions & Exhibition at Grand Hall on the 1st floor, CC, 08:00 – 17:00 hrs.

Badges and Security

All participants will receive their badges upon registration. It is mandatory that participants wear their badge at all times when at the conference venue.

Language

The official language of the conference is English. Some sessions will be provided with a Thai translation and Sign Language Translation.

How to get there

Thailand Science Park (TSP), Thailand Science Park is located 42 km north of Bangkok. There are a number of ways that you can get there: by private car, taxi, bus, train or by NGV Van.

By Private Car

Via Pahonyothin Road, the Thailand Science Park is well connected to central Bangkok via multiple in-bound routes to the west outer ring road – Bang Bua Thong, the Chaeng Wattana Express way- Bangpoon – Bangsai, the Donmueng Tollway.

By Taxi Service

Inform the taxi driver that you would like to go to the Thailand Science Park, which is beside the Thammasat University's Rangsit campus. The taxi will be able to take you in the general direction. The park and the Thammasat University share the same entrance.

The taximeter starts at 35 THB and 2 THB is added for every 0.31 km. As a general practice, when a taxi goes on an expressway or motorway, the passenger is expected to pay the toll fee. It is recommended that you take the expressway as it is faster. Under normal traffic conditions, the meter charges for the trip will be approximately 450 THB (about 12 USD). During rush hours or when there is heavy traffic, the meter charges can go up to 600 baht. You may print the direction card below and give it to your taxi driver to help him bring you to the Thailand Science Park.

For Taxi Driver

Please send this passenger to Thailand Science Park near Thammasat-Rangsit University. (อุทยานวิทยาศาสตร์ประเทศไทย อยู่ในบริเวณเดียวกับมหาวิทยาลัยธรรมศาสตร์ รังสิต)

Thailand Science Park

111 Thailand Science Park, Paholyothin Road, Khlong Nueng, Khlong Luang, Pathumthani, Thailand 12120

Tel. 02-564-7200

By Bus

A large number of buses ply between the Thailand Science Park and various locations:

Air-conditioned Buses: Number 510, 39

Microbuses: Thammasat Rangsit – Ta Pra Jun

By Train

You can also reach the Thailand Science Park by train by taking the Northeast route at Chiang Rak station. At the near future, the Thailand Science Park will be even more assessable with government's Red Line train project. This rail expansion project will bring commuters right up to the steps of the Thammasat University's Rangsit campus and the Thailand Science Park.

By Natural Gas Vehicle (NGV Van)

You may reach the Thailand Science Park by taking NGV vans that run between the Jatujak BTS Station and the Thailand Science Park, as well as those running between the Victory Monument and the Thammasat University's Rangsit campus, which is adjacent to the park.

Suvarnabhumi Airport (BKK) to Asawin Grand Convention Hotel

Suvarnabhumi Airport (BKK)

ASAWIN GRAND CONVENTION HOTEL

ARL Suvarnabhumi Airport Station —22 mins→ ARL Makkasan Station / MRT Phetchaburi Station —19 mins→ MRT Kamphaeng Phet Station —23 mins→ 1-1 EV (29 EV): Bang Khen - Hua Lamphong

S2 EV (554 EV): Rangsit - Suvarnabhumi Airport (Expressway) — 1 hour 45 mins without traffic (39.2 km)

Taxi — 29 - 44 mins without traffic (39.2 km)

Airport Rail Link

The Metropolitan Rapid Transit

EV Bus

Taxi Meter

Don Mueang International Airport (DMK) to Asawin Grand Convention Hotel

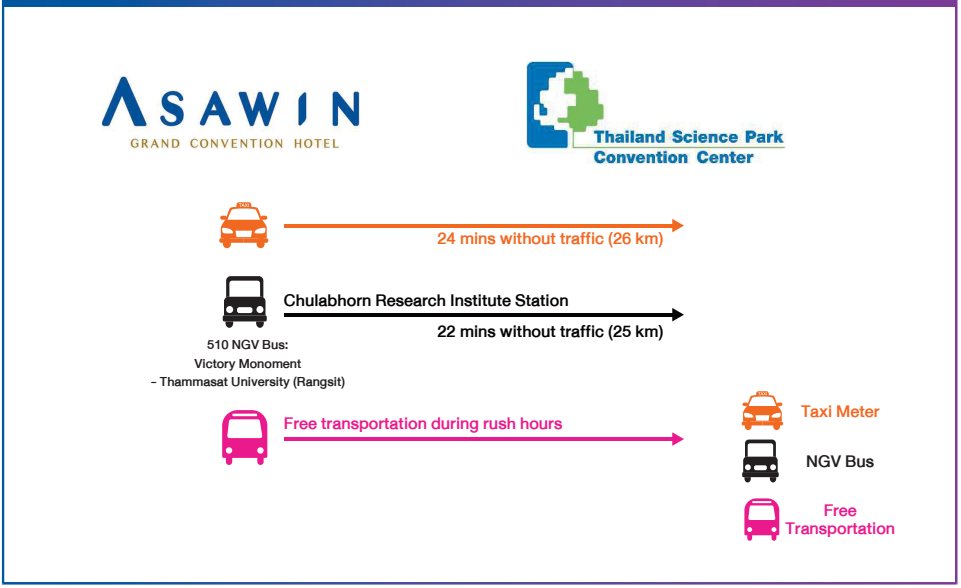
Don Mueang International Airport (DMK)

ASAWIN GRAND CONVENTION HOTEL

Taxi — 11 - 18 mins without traffic (39.2 km)

Taxi Meter

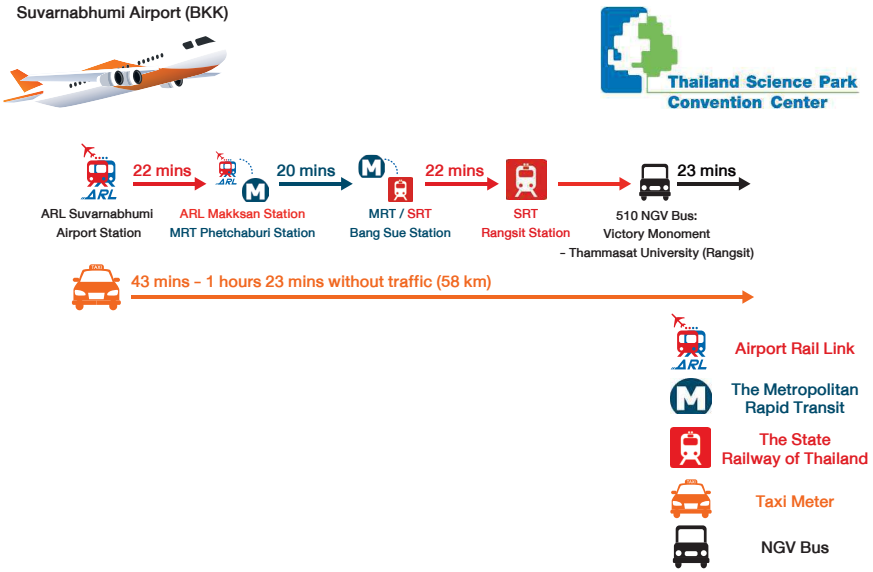
Asawin Grand Convention Hotel to Thailand Science Park Convention Center (TSPCC)



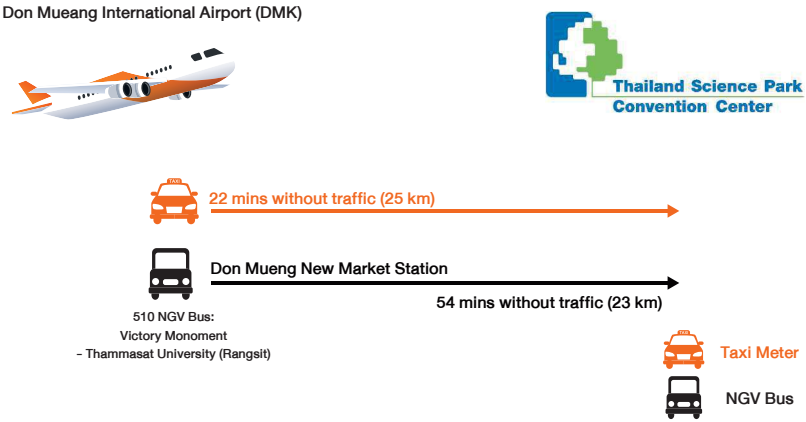
Special service

Free transportation from Asawin Hotel to Thailand Science Park will be provided for i-CREATe 2023 participants during 9-11 August 2023 during rush hours.

Suvarnabhumi Airport (BKK) to Thailand Science Park Convention Center (TSPCC)



Don Mueang International Airport (DMK) to Thailand Science Park Convention Center



Registration

The following table gives you an overview of i-CREATe 2023 Registration fees.

Type	Registration Fees (THB/Person)	Registration Fees (USD/Person)
■ Conference - Registration		
Regular	20,000 THB	580 USD
Early Bird ends July 7, 2023	16,800 THB	480 USD
CREATe Asia Alliance members	18,000 THB	520 USD
Group 5 & more	15,500 THB	440 USD
Elderly / Persons with Disabilities / Thai citizen	10,000 THB	300 USD
One day pass (9-10-11 Aug 2023)	3,500 THB	100 USD
■ Global Student Innovation Challenge (gSIC 2023)		
Student Team (up to 3 students per team)	20,000 THB	580 USD
Student Team (up to 5 students per team)	24,000 THB	680 USD
NSTDA Staff	Free of charge	Free of charge

***Remark**: These registration fees include VAT 7%

Conference registration includes the conference program book, flash drive, and bag, all lunches and morning & afternoon breaks. Participants can join all sessions provided in the conference which are:

Conference:	i-CREATe 2023 (9-11 August 2023)
Contest:	Global Student Innovation Challenge (gSIC 2023)
Exhibition:	Exhibitions of private & public organizations and gSIC 2023 at Grand Hall, 1st floor, TSPCC building
Technical Tours:	On 8 August 2023 Tour A: To visit 1. National Science and Technology Development Agency (NSTDA), Pathum Thani 2. The Center of Excellence in Creative Engineering Design and Development (CED), Thammasat University, Pathum Thani 3. A UNESCO World Heritage Site, Phra Nakorn Si Ayutthaya Tour B: To visit 1. Watsanawet Social Welfare Development Center for Older Persons, Phra Nakhon Si Ayutthaya 2. Historic Sites, Phra Nakorn Si Ayutthaya
Reception:	All kinds of conference registration and the winners of gSIC 2023 can join the reception on 10 August 2023 with performances of students with disabilities at night, Event Square, 2nd floor, TSPCC building.

gSIC 2023 registration includes the conference program book, flash drive, and bag, all lunches and morning & afternoon breaks. Participants can join all sessions provided in the conference which are:

Conference:	i-CREATe 2023 (9-11 August 2023)
Contest:	Global Student Innovation Challenge (gSIC 2023)
Exhibition:	Exhibitions of private & public organizations and gSIC 2023 at Grand Hall, 1st floor, TSPCC building

CONFERENCE PROGRAM

Tuesday, 8 August 2023

08:15 – 08:45	Registration for Tour A & B at Asawin Hotel Lobby
08:45 – 17:00	**Tour A:** To visit 1. National Science and Technology Development Agency (NSTDA), Pathum Thani 2. The Center of Excellence in Creative Engineering Design and Development (CED), Thammasat University, Pathum Thani 3. A UNESCO World Heritage Site, Phra Nakorn Si Ayutthaya
08:45 – 17:00	**Tour B:** To visit 1. Watsanawet Social Welfare Development Center for Older Persons, Phra Nakhon Si Ayutthaya 2. Historic Sites, Phra Nakorn Si Ayutthaya

Wednesday, 9 August 2023

1st floor, Auditorium Room, Sirindhorn Science Home (SSH) (Building 18)

08:00 – 16:00	Registration at Foyer, 1st floor, SSH
09:30 – 10:00	Welcome Remarks by 1. Prof. Dr. Sukit Limpijumnong President, National Science and Technology Development Agency (NSTDA) 2. Prof. Dr. Pairash Thajchayapong General Chair, i-CREATe 2023 The CREATe Asia Agreement 2023 Signing Ceremony
10:00 – 10:30	Morning Break at 1st floor, Foyer, SSH

10:30 – 11:00	**Keynote Session 1:** The Application of Technology in Rehabilitation by Mr. Simon Wong Principal Occupational Therapist of CUHK Medical Centre, Hong Kong
11:00 – 11:30	**Keynote Session 2:** Human-machine Interaction and Collaboration in Rehabilitation Robotics by Prof. Hongliu Yu Director of Institute of Rehabilitation Engineering and Technology University of Shanghai for Science and Technology, China
11:30 – 12:00	**Keynote Session 3:** Empowering Health Equity: Expanding Access to Medical Devices and Digital Platforms for Reducing Health Inequality by Saowaruj Rattanakhamfu, Ph.D. Vice president for research personnel, Thailand Development Research Institute (TDRI), Thailand
12:00 – 12:30	**Panel Session 1:** Achieving Accessibility for All through Public Procurement Law and Policy and Effective National Enforcement Mechanism by Mr. Monthian Buntan Member of the Senate, Royal Thai Government and former United Nations Committee on the Rights of Persons with Disabilities Aiko Akiyama Social Affairs Officer, Social Development Division United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)
12:30 – 13:30	Lunch at 1st floor, Cafeteria, SSH

Wednesday, 9 August 2023

1st floor, Lecture 1, Sirindhorn Science Home (SSH) (Building 18)
gSIC Oral Presentation: Design Category

09:00 – 09:30	The Panel of Judges Meeting at SC102, 1st floor, SSH
10:30 – 10:40	Welcoming and Briefing

10:40 – 10:50	D01: 2 Care, Taiwan
10:50 – 11:00	D02: Adjustable Patient Lift Sling, Thailand
11:00 – 11:10	D03: Bag to Back, Hong Kong
11:10 – 11:20	D04: Diabetic Foot Bathroom Scale (DF-Scale), Taiwan
11:20 – 11:30	D05: EASYSULIN, Taiwan
11:30 – 11:40	D06: Elegant Hanger, Hong Kong
11:40 – 11:50	D07: Gait Training Machine for Children with Cerebral Palsy, Thailand
11:50 – 12:00	D08: iStrike, Singapore
12:00 – 12:10	D09: Key Buddy, Hong Kong
12:10 – 12:20	D10: MSB - The Multipurpose S-shaped Body Brace, Thailand
12:20 – 12:30	D11: ReControl: An Intelligent Individualized Energy Conservation System for COVID Long-haulers, Taiwan
12:30 – 13:30	Lunch at 1st floor, Cafeteria, SSH
13:30 – 13:40	D12: Smart Chair for the elderly and leg rehabilitation, Thailand
13:40 – 13:50	D13: Smart grasp training pegboard for stroke patient, Thailand
13:50 – 14:00	D14: Wonderkits, Hong Kong
14:00 – 14:10	D15: PAWA, Singapore
14:10 – 14:20	D16: EZ Pulle, Singapore
14:30 – 15:00	Afternoon Break at 1st floor, Foyer, SSH

Wednesday, 9 August 2023

1st floor, Lecture 2, Sirindhorn Science Home (SSH) (Building 18)
gSIC Oral Presentation: Technology Category

10:30 – 10:40	Welcoming and Briefing
10:40 – 10:50	T01: Bicycle warning system for rider with hearing impairment, Thailand
10:50 – 11:00	T02: Dancing with a Smart Self-Driving Powered Wheelchair, Taiwan
11:00 – 11:10	T03: Diagnosis Application for Parkinson's Disease by Hand Tremor Analysis, Thailand
11:10 – 11:20	T04: Diagnose K+, Singapore
11:20 – 11:30	T05: Dysarthria voice conversion (DVC 3.1 Plus), Taiwan
11:30 – 11:40	T06: EyeControlLife, Taiwan
11:40 – 11:50	T07: fNIRS-based neurofeedback training for subjects with anxiety (fNIRS: functional near-infrared spectroscopy), Taiwan
11:50 – 12:00	T08: Footprint Behavior Analysis, Geofence Automatic Generation, and Position Prediction for Dementia Patients Using Smartwatch GPS Information, Taiwan
12:00 – 12:10	T09: Gyroscopic Contactless Head Mouse, Thailand
12:10 – 12:20	T10: Hear Guardian, Thailand
12:20 – 12:30	T11: Hip and Knee Joint Integrated Intelligent Prostheses, China
12:30 – 13:30	Lunch at 1st floor, Cafeteria, SSH
13:30 – 13:40	T12: Kotaka EV Electric Car for the Disabled, Thailand
13:40 – 13:50	T13: ListeNatural – computer-vision based low power consumption smart-assisted hearing device with spatial navigation, Taiwan

13:50 – 14:00	T14: O-RA (Osteoarthritis Rehabilitation Assistant for the Elderly with deep learning technology), Thailand
14:00 – 14:10	T15: Visual interaction-based meal assistance robot, China
14:10 – 14:20	T16: Smart Vision, Singapore
14:20 – 14:30	T17: Smart Mobility Aid, Singapore
14:30 – 15:00	Afternoon Break at 1st floor, Foyer, SSH

Wednesday, 9 August 2023

1st floor, Auditorium Room, Convention Center (TSPCC) (Building 14)
Prototype Demonstration: Design Category

15:00 – 15:10	D01: 2 Care, Taiwan
15:10 – 15:20	D02: Adjustable Patient Lift Sling, Thailand
15:20 – 15:30	D03: Bag to Back, Hong Kong
15:30 – 15:40	D04: Diabetic Foot Bathroom Scale (DF-Scale), Taiwan
15:40 – 15:50	D05: EASYSULIN, Taiwan
15:50 – 16:00	D06: Elegant Hanger, Hong Kong
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16:30 – 16:40	D10: MSB - The Multipurpose S-shaped Body Brace, Thailand
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17:00 – 17:10	D13: Smart grasp training pegboard for stroke patient, Thailand
17:10 – 17:20	D14: Wonderkits, Hong Kong
17:20 – 17:30	D15: PAWA, Singapore
17:30 – 17:40	D16: EZ Pulle, Singapore

Wednesday, 9 August 2023

1st floor, Auditorium Room, Convention Center (TSPCC) (Building 14)
Prototype Demonstration: Technology Category

15:00 – 15:10	T01: Bicycle warning system for rider with hearing impairment, Thailand
15:10 – 15:20	T02: Dancing with a Smart Self-Driving Powered Wheelchair, Taiwan
15:20 – 15:30	T03: Diagnosis Application for Parkinson's Disease by Hand Tremor Analysis, Thailand
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15:40 – 15:50	T05: Dysarthria voice conversion (DVC 3.1 Plus), Taiwan
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17:10 – 17:20	T14: O-RA (Osteoarthritis Rehabilitation Assistant for the Elderly with deep learning technology), Thailand
17:20 – 17:30	T15: Visual interaction-based meal assistance robot, China
17:30 – 17:40	T16: Smart Vision, Singapore
17:40 – 17:50	T17: Smart Mobility Aid, Singapore
18:00 – 19:30	The panel of judges meeting for gSIC results at CC402 Board Room, 4th floor, CC

Thursday, 10 August 2023

1st floor, Auditorium, Sirindhorn Science Home (SSH) (Building 18)

08:00 – 09:00	Registration at Foyer, 1st floor, SSH
09:00 – 09:30	Keynote Session 4: Digital Inclusion: Digital ID Mr. Torpong Selanon Commissioner of The National Broadcasting and Telecommunications Commission, Thailand
09:30 – 11:00	Panel Session 2: Who benefits from Assistive Technology? by 1. Dr. Suporntum Mongkolsawad Secretary General of The Redemptorist Foundation for People with Disabilities, Thailand 2. Mr. Withayoot Bunnag Presidents of National Association of the Deaf in Thailand 3. Dr. Non Arkaraprasertkul Senior Expert in Smart City Promotion, Digital Economy Promotion Agency of ThailandNational Broadcasting and Telecommunication Commission, Thailand

Thursday, 10 August 2023

1st floor, Lecture 2, Auditorium, Sirindhorn Science Home (SSH) (Building 18)

09:00 – 09:30	Keynote Session 5: Data-driven Assistive Robots by Prof. Wei Tech Ang Executive Director of Rehabilitation Research Institute of Singapore, Nanyang Technological University, Singapore
09:30 – 11:00	Panel Session 3: Marching towards Medical Hub: Certifications of Biomedical Engineering by 1. Prof. Jiunn-Horng Kang Dean of College of Biomedical Engineering, Taipei Medical University, Taipei 2. Assoc. Prof. Nuntachai Thongpanee Dean of College of Biomedical Engineering, Rangsit University (RU), Thailand 3. Assoc. Prof. Dr. Sumet Umchid Assistant to the President for Academic Promotion and Educational Quality Assurance, King Mongkut's University of Technology North Bangkok (KMUTNB), Thailand 4. Asst. Prof. Dr.scient.med. Phornphop Naiyanetr Department of Biomedical Engineering, Faculty of Engineering, Mahidol University (MU), Thailand 5. Dr. Wongwit Senevongse Head of Biomedical Engineering Working Group, Council of Engineers of Thailand, and Head of Postgraduate Biomedical Engineering Program, Department of Biomedical Engineering, Faculty of Engineering, Srinakharinwirot University, Thailand

Thursday, 10 August 2023

1st floor, Lecture 1, Sirindhorn Science Home (SSH) (Building 18)

09:00 – 11:00	Workshop Session 1: Choosing the optimum wheelchair. Why can you benefit from a light wheelchair? by Hiroto Hayashi Clinical Educator/Specialist of Sunrise Medical (Asia-Pacific region), Japan
11:00 – 12:00	Lunch at 1st floor, Cafeteria, SSH

Thursday, 10 August 2023

3rd floor, Auditorium, Convention Center (TSPCC) (Building 14)

12:30 – 13:30	All participants to be seated
13:30 – 14:30	Opening Ceremony - Arrival of Her Royal Highness Princess Maha Chakri Sirindhorn - Welcome party to receive H.R.H. Princess Maha Chakri Sirindhorn - Global Student Innovation Challenge 2023 Award Ceremony - Address by H.R.H. Princess Maha Chakri Sirindhorn - Keynote speech on "The Prostheses Foundation of H.R.H. The Princess Mother: innovations from the past, present, and future" by Clinical Professor Niwes Nantachit, Secretary General of Prostheses Foundation of H.R.H. The Princess Mother
15:00 – 16:30	Afternoon break at CC204 Room, 2nd floor, CC

Thursday, 10 August 2023

1st floor, Grand Hall, Convention Center (CC) (Building 14)

15:00 – 16:00	- H.R.H. Princess Maha Chakri Sirindhorn to visit the Exhibition Zone - H.R.H Princess Maha Chakri Sirindhorn to take group photo - H.R.H. Princess Maha Chakri Sirindhorn to leave the convention

Friday, 11 August 2023

3rd floor, Auditorium, Convention Center (CC) (Building 14)

08:00 – 15:00	Registration at Grand Hall, 1st floor, CC
09:30 – 10:00	Keynote Session 7: Bridging the Gap: Integrating Physiatry and Rehabilitation Engineering for Optimal Patient Outcomes by Prof. Ta-Sen Wei President of Taiwan Rehabilitation Engineering and Assistive Technology Society (TREATS), Taiwan
10:00 – 10:30	Keynote Session 8: Advancing the field of Assistive Technology; global challenges and opportunities by Prof. Dr. Luc de Witte President of Global Alliance of Assistive Technology Organizations (GAATO)
10:30 – 11:00	Morning Break
11:00 – 12:30	Panel Session 4: Gap Analysis in Educational System for People with Disabilities by 1. Dr. Somboon Arsirapoj Director of Punyawutikorn School, Thailand Acadamic President of The Foundation for the Welfare of Mentally Retardation of Thailand under the Royal Patronage of Her Majesty the Queen, Thailand 2. Wachira Srikoom, Ph.D. Senior Science Educator and Director of Human Resource and Organization Development, The Institute for the Promotion of Teaching Science and Technology (IPST), Thailand 3. Assoc. Prof. Dr. Panrasee Ritthipravat Director of Artificial Intelligence in Medicine Lab, Department of Biomedical Engineering, Mahidol University, Thailand 4. Assoc. Prof. Dr. Boonserm Kaewkamnerdpong Head of Human Factors Engineering Research Group Biological Engineering Program, Faculty of Engineering, King Mongkut's University of Technology Thonburi (KMUTT), Thailand

Friday, 11 August 2023

1st floor, Grand Hall, Convention Center (CC) (Building 14)

12:30 – 13:30	Lunch at 1st floor, Grand Hall, CC
13:30 – 15:00	Panel Session 5: From Contest to Commerce by 1. Ms. Natcha Rojviroj CEO and Industrial Designer of BLIX Pop Company Limited, Thailand 2. Mr. Methasit Kiatchaipha Managing Director of Great Tech and Innovation Company Limited, Thailand 3. Mr. Teerapong Smutassadong Managing Director of CMED Medical Company Limited, Thailand 4. Dr. Thanapol Luckanawat Managing Director of Peony Development Company Limited, Thailand 5. Mr. Warath Sitlaothaworn CEO and Design Engineer of Medicubed Company Limited, Thailand 6. Mr. Yuttapong Aunhatthaweesup School of Information Technology, King Mongkut's University of Technology Thonburi, Thailand

Friday, 11 August 2023

4th floor, CC403, Convention Center (CC) (Building 14)

09:30 – 10:30	Paper/Poster Session 1: Assistive Technology
10:30 – 11:00	Morning Break
11:00 – 12:30	Paper/Poster Session 2: Rehabilitation Technology
12:30 – 13:30	Lunch at 1st floor, Grand Hall, CC
13:30 – 15:00	Paper/Poster Session 3: Biomedical Science and Technology
15:00 – 15:30	Afternoon Break

Friday, 11 August 2023

4th floor, CC404, Convention Center (CC) (Building 14)

09:30 – 12:30	Workshop Session 2: Markerless Mocap in Healthcare, the Translational Possibilities 1. Prof. Kenneth Fong Professor of Department of Rehabilitation Sciences, The Hong Kong Polytechnic University, and Director of Research Centre for Assistive Technology, The Hong Kong Polytechnic University, Hong Kong 2. Prof. Wei Tech Ang Executive Director of Rehabilitation Research Institute of Singapore (RRIS), Nanyang Technological University, Singapore 3. Dr. Prayook Jatesiktat Research Fellow of Rehabilitation Research Institute of Singapore (RRIS), Nanyang Technological University, Singapore
12:30 – 13:30	Lunch at 1st floor, Grand Hall, CC
13:30 – 15:00	Workshop Session 3: Development of Walking Tests Application for Physical Performance Evaluation by Kulpriya Wechkama and Kornanong Yuenyongchaiwat Department of Physical Therapy, Faculty of Allied Health Sciences, Thammasat University, Thailand
15:00 – 15:30	Afternoon Break
15:30 – 17:00	Workshop Session 4: Virtual Reality Exercise for Improving Cardiovascular Performance by Chanakan Chitjamnongchai and Kornanong Yuenyongchaiwat Department of Physical Therapy, Faculty of Allied Health Sciences, Thammasat University, Thailand

Friday, 11 August 2023

4th floor, CC405, Convention Center (CC) (Building 14)

09:30 – 12:30	Workshop Session 5: Wheelchair cushions. Why, who and how? by Hiroto Hayashi Clinical Educator/Specialist of Sunrise Medical (Asia-Pacific region), Japan
10:30 – 11:00	Morning Break
12:30 – 13:30	Lunch at 1st floor, Grand Hall, CC
13:30 – 16:30	Workshop Session 6: Disability-Inclusive Disaster Risk Reduction by Mr. Somchai Rungsilp Community Development Manager of Community Development Department, Asia-Pacific Development Center on Disability (APCD), Thailand

INTERNATIONAL ORGANIZING COMMITTEES

Title	Fullname	Organization
General Chair	Pairash Thajchayapong	National Science and Technology Development Agency (NSTDA), Thailand
Advisory Committee	Sukit Limpijumnong	NSTDA, Thailand
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	Wei Tech Ang	Rehabilitation Research Institute of Singapore (RRIS), Nanyang Technological University (NTU), Singapore
	Ta-Sen Wei	Taiwan Rehabilitation Engineering and Assistive Technology Society (TREATS), Taiwan
Scientific Program and Editorial Committee Co-Chairs	Chai Wuttiwiwatchai	National Electronics and Computer Technology Center (NECTEC), NSTDA, Thailand
	Wei Tech Ang	RRIS, NTU, Singapore
	Ananlada Chotimongkol	Assistive Technology and Medical Devices Research Center (A-MED), NSTDA, Thailand
	Arun Kumar	Singapore Polytechnic, Singapore
	Bunyong Rungroungdouyboon	Thammasat University, Thailand
	Cha Cher Liang	Temasak Polytechnic, School of Engineering, Singapore

Title	Fullname	Organization
	Chatchawan Hansakunbuntheung	A-MED, NSTDA, Thailand
	Chih-Hsiu Cheng	Chang Gung University, Taiwan
	Decho Surangsrirat	A-MED, NSTDA, Thailand
	Duojin Wang	University of Shanghai for Science and Technology (USST), China
	Emma Friessen	NSW Paediatric Spinal Outreach Services, Australia
	Ian Gibson	University of Twente, Netherlands
	Jasmy Yunas	Universiti Teknologi Malaysia, Malaysia
	Jiro Sagara	Kobe Design University, Japan
	Kenneth Fong	Department of Rehabilitation Sciences, Hong Kong Polytechnic University (PolyU), Hong Kong
	Kitti Wongthavarawat	A-MED, NSTDA, Thailand
	Lorenzo Desideri	Regional Center for Assistive Technology – AIAS Bologna, Italy
	Luc de Witte	Global Alliance of Assistive Technology Organizations (GAATO)
	Onintra Poobrasert	A-MED, NSTDA, Thailand
	Phyllis Liang	RRIS, NTU, Singapore
	Pichaya Tandayya	Prince of Songkla University, Thailand
	Renzo Andrich	The Global Assistive Technology Information Network (EASTIN), Italy

Title	Fullname	Organization
	Stella Cheng	PolyU & Hong Kong Occupational Therapy Association, Hong Kong
	Yuichiro Honda	ISUPTECH, Japan
	Zhongxu Hu	NTU, Singapore
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	Wei Tech Ang	RRIS, NTU, Singapore
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	Chatchawan Hansakunbuntheung	A-MED, NSTDA, Thailand
	Kenneth Fong	PolyU, Hong Kong
	Duojin Wang	USST, China
	Jiunn-Horng Kang	College of Biomedical Engineering, Taipei Medical University, Taiwan
	Kavin Karunrattanakul	A-MED, NSTDA, Thailand
	Pongpeera Chawalathawat	Omega Grit Company, Thailand
	Ta-Chieh (Jerry) Hsu	TREATS, Taiwan
Secretariat	Sarinya Quilitz	A-MED, NSTDA, Thailand
	Jagkapong Pipitpukdee	A-MED, NSTDA, Thailand
	Jessada Kongsukvarakul	A-MED, NSTDA, Thailand
	Channarong Prommakan	National Nanatechnology Center (NANOTEC), NSTDA, Thailand
	Vera Yang	RRIS, NTU, Singapore

KEYNOTE SESSIONS

Date	10 August 2023 / Opening Ceremony
Time	14:00 – 14:15 hrs.
Venue	Auditorium, 3rd floor of Convention Center (CC) (Building18)

Clinical Professor Niwes Nantachit

Secretary General of Prostheses Foundation of H.R.H the Princess Mother, Thailand

Clinical Professor Niwes Nantachit is a medical doctor with special training in Hematology and currently is the Secretary General of Prostheses Foundation of H.R.H. The Princess Mother. His two terms of serving Chiang Mai University as president of the university provided him with the opportunity to become the chairman of several foundations and associations in addition to the area of education administration. His medical administrative experiences include being the Dean of Faculty of Medicine, the Director of Maharaj Nakhon Chiang Mai Hospital, the largest hospital in northern Thailand, and the Special Health Center, at Chiang Mai University. He also served the Thai parliament as a member of National Legislative Assembly contributed to drafting several acts and bills in education and health care.

Innovation of Prostheses Foundation of H.R.H. The Princess Mother: past, present, and future

The presentation displays innovative prostheses that the prostheses foundation had fabricated in the past, including what is presently being produced today, and what can be expected in the future. The Prostheses Foundation of H.R.H. The Princess Mother, founded by H.R.H. Princess Sri Nagarindra and H.R.H. Princess Galyani Vadhna in 1992, provides prostheses to amputees of all races free of charge. Presently, we are honored to have H.R.H. Princess Maha Chakri Sirindhorn

lead the foundation as an honorary president. During the foundation's beginnings, the prosthetic sockets were produced by gauze bandages dipped into liquid polystyrene which was made from waste plastic bottles dissolved in acetone. This innovative approach was in response to the initial economic challenges that required the costs of prostheses to be reduced, as imported materials were too expensive for impoverished amputees.

The sand-casting technique is an innovative technique for prosthetic production that has been adopted by the foundation in 2008 and is used to fabricate below-knee prostheses. This technique minimizes both costs and time since all materials used can be sourced within the nation, and the below-knee prostheses can be produced within a day. It is also environmentally friendly because of the use of recycled sand that replaces the waste plastic material used and is an example of a Bio-Circular-Green (BCG) model. Other components used are manufactured in Thailand and utilize appropriate technology, certified by Thailand Industrial Standard Institute, opening the way forward for more research and development within the nation.

The Prostheses Foundation aims to introduce biomedical engineering into prosthetic devices and has been working closely with the National Astronomical Research Institute of Thailand (NARIT) to develop an electric-driven motorized arm prosthesis, using both mechanical engineering technology and a 3-dimensional printing method. In the future, the two institutes will add a strain gauge sensor and an electromyographic sensor, developed by Shanghai Institute of Ceramics, Chinese Academy of Science, into this prosthetic arm to give even greater control of its movements for more sophisticated tasks. As a pilot project, this collective knowledge will later be adapted to design and develop the components for both the arm and leg prostheses of the foundation. This innovation could set a new standard for Thailand's prosthetic and orthotic technology, bettering amputees' quality of life. In addition, this innovation will reduce the government's cost of amputee care as the need for importing technology is reduced. Lastly, this approach also serves the foundation's aim of developing prefabricated prostheses including sockets, which will lessen the time needed for servicing amputees, reduce waste and increase production efficiency.

Date	9 August 2023 (Wednesday)
Time	10:30 – 12:30 hrs.
Venue	Auditorium, 1st floor of Sirindhorn Science Home (SSH) (Building 18)

Mr. Simon Wong

Principal Occupational Therapist
CUHK Medical Centre, Hong Kong

Mr. Simon Wong is an experienced occupational therapist with more than 40 years of clinical experience. He is currently the Principal Occupational Therapist in the CUHK Medical Centre, Hong Kong. He is now the President of CREATe Asia, the Chairman of the Hong Kong Institute of Occupational Therapy and the Convenor of the SIG on Assistive Technology, the Hong Kong Occupational Therapy Association.

He witnessed the application of technology in rehabilitation from the time of workshop-made aids and gadgets to the use of robots and virtual reality. He had wide spectrum of experience related to technology, including the application of splints and orthoses for people with orthopaedic or neurological problems, setting up a seating clinic and a wheelchair bank, and providing consultation to the running of a rental service for assistive device.

The Application of Technology in Rehabilitation

Mr. Simon will compare the differences of the major assistive devices for patient care in the past 30 years. He will share the story of the development of hand splinting in occupational therapy in Hong Kong. He will also introduce his new design of hand splint and assistive device for enhancing neuroplasticity through early involvement in activities of daily living. He will further discuss the model of integrating assistive technology, telerehabilitation and rental service for enhancing the quality of rehabilitation services.

Time	11:00 – 11:30 hrs.

Dr. Hong-Liu Yu

Director of Institute of Rehabilitation Engineering and Assistive Technology, University of Shanghai for Science and Technology, China

Dr. Hongliu Yu is a professor and the director of Institute of Rehabilitation Engineering and Technology, University of Shanghai for Science and Technology (USST), and the President of Shanghai Engineering Research Center of Assistive Devices. Dr. Hongliu received his BS degree in engineering from Huazhong University of Science and Technology (HUST) in 1987 and received his Ph.D. from University of Shanghai for Science and Technology (USST) with study in the field of Intelligent Rehabilitation Engineering in 2009. His research interests focus on rehabilitation robotics, intelligent prosthetics, human-machine intelligent interaction, etc.

Dr. Hongliu found the first education program of rehabilitation engineering in the world. He published over 300 papers and obtained over 100 authorized invention patents. He is currently taking several academic posts, including president of Rehabilitation Robotics Alliance and chairman of Rehabilitation Engineering and Industry Development Committee of Chinese Association of Rehabilitation Medicine, editor in chief of the Journal of World Rehabilitation Engineering and Devices, chairman of Rehabilitation Device Committee of China Association of Assistive Products, executive council member of Chinese Association of Rehabilitation Medicine (CARM), chairman of Committee of Rehabilitation Engineering of Shanghai Society of Biomedical Engineering, etc. He is also the former president of the Coalition of Rehabilitation Engineering and Technology of Asia (CREATe Asia).

Human-machine Interaction and Collaboration in Rehabilitation Robotics

In a broad sense, rehabilitation robot is a kind of robot that can perform functional assistance or rehabilitation treatment through programming and automatic control, which has the characteristics of long-term close contact and interaction with humans. With the accelerated evolution of strong artificial intelligence technology, rehabilitation robots are about to enter an age of "human-machine symbiosis". In the natural space of daily activities assistance,

human and robot can not only interact and cooperate naturally and safely, but also realize a high degree of coupling from structure to perception and behaviour. This report will first discuss the classifications, human-machine interaction and collaboration characteristics, and key technologies of rehabilitation robots. On this basis, taking the development of typical rehabilitation robots such as intelligent meal-assistance robots as an example, the application of machine vision and artificial intelligence in the human-machine interaction and cooperation of the developed meal-assistance robots will be discussed from the perspective of the complex physical interaction of the human-machine environment in the robot-assisted feeding, especially the methods for the human eating intention and state recognition and the food characteristics identification, as well as the methods of grasping posture decision-making and dynamic path planning for robotic arms. In addition, the characteristics and methods of human-machine interaction and cooperation of rehabilitation training robots and intelligent prostheses will be briefly discussed. Finally, the development trends and directions of human-machine interaction and cooperation of intelligent rehabilitation robots will be prospected.

Time	11:30 – 12:00 hrs.

Saowaruj Rattanakhamfu, Ph.D.

Vice President and Research Director for Innovation Policy for Sustainable Development, Thailand Development Research Institute (TDRI), Thailand

Saowaruj Rattanakhamfu is the Vice President and Research Director for Innovation Policy for Sustainable Development at Thailand Development Research Institute (TDRI). She holds a Ph.D. in Economics from the University of Melbourne, Australia, an M.A. in Economics from the University of Washington, USA, and a B.A. in Political Science (International Relations) from Chulalongkorn University, Thailand. Her research focuses on various issues, including Innovation Policy, Higher Education Policy, and ASEAN Trade and Investment Policy. Some of her research topics include Government Procurement for Innovation in Thailand, and Mechanisms and Resource Allocation of Thailand's Science, Research, and Innovation System. Aside from her research work, she actively participates in committees and projects related to economic development and policy in Thailand.

Empowering Health Equity: Expanding Access to Medical Devices and Digital Platforms for Reducing Health Inequality

Thailand continues to grapple with the persistent issue of health inequality, particularly among individuals with disabilities, the underprivileged, and those residing in remote areas. While numerous agencies are striving to enhance access to medical devices and expand the utilization of digital health platforms to address these challenges, several key implementation hurdles must be overcome. These hurdles include establishing effective government financing mechanisms that connect producers, payers, and consumers, improving regulations and the procurement system, fostering technological development and innovation, ensuring quality education in biomedical engineering, and adequately training and producing medical personnel to meet the growing demands.

This study aims to present an in-depth analysis of the current state of access mechanisms for medical devices and digital platforms in Thailand, with the goal of reducing health inequality. It examines the key stakeholders involved, identifies limitations and challenges, highlights success factors, and assesses the impact of these access mechanisms on reducing disparities. Additionally, the study offers policy recommendations for scaling up efforts and showcases successful case studies that have effectively increased access to medical devices and digital platforms, thereby reducing health inequality in Thailand.

Date	10 August 2023 (Thursday)
Time	09:00 – 09:30 hrs.
Venue	1st floor of Sirindhorn Science Home (SSH) (Building 18)

Mr. Torpong Selanon

Commissioner of the National Broadcasting and Telecommunications Commission (NBTC), Thailand

Born in 1976, Mr. Torpong Selanon received master's degree from the Graduate School of Social Development and Management Strategy, National Institute of Development Administration (NIDA), Thailand. He was previously vice president of the Thailand Association of the Blind (2020 - 2021) before being selected to be Commissioner of the National Broadcasting and Telecommunications in the area of Consumer Protection and Promotion and Protection of Human Rights in April 2022.

Mr. Selanon has long been an advocate for improving the quality of people's lives. He has also served under many nationally recognized organizations such as: Advisor for the National Broadcasting and Telecommunication Commission in the area of Consumer Protection and Promotion and Protection of Human Rights, Director of Career Promotion and Employment of Persons with Disabilities for Disabilities Thailand, Qualified Director of the Department of Empowerment of Persons with Disabilities under the Ministry of Social Development and Human Security, Broadcasting Subcommittee on the topic of Over the Top services for National Broadcasting and Telecommunications Commission, Advisor to subcommittee of People with Disabilities under the Commission of Social, Children, Women, Elderly People, People with Disabilities, and Minorities Welfare of National Legislative Assembly of Thailand, and President of Thailand Association of the Blind.

Being visually impaired himself, Mr. Selanon sees the importance of being able to access services, especially telecommunication services to improve quality of life in the digital transformation era. Mr. Selanon as the NBTC commissioner is committed to keeping working and advocating for a connected world.

Digital Inclusion: Digital ID

This session, hosted by Mr. Torpong Selanon, The NBTC Commissioner for promotion of people's liberty and rights, aims to present the importance of Digital ID for Digital Inclusion. The challenges in implementation of digital identification systems, commonly known as Digital ID, into digital inclusion. Digital ID is fostering digital inclusion and has potential to empower individuals worldwide. Also presenting the current role of the NBTC in working towards Thailand's Digital Identity and Digital Inclusion.

Time	09:00 – 09:30 hrs., Lecture 2, SSH

Prof. Wei Tech Ang

Executive Director of Rehabilitation Research Institute of Singapore (RRIS), Nanyang Technological University (NTU), Singapore

Prof. Wei Tech Ang graduated with a PhD degree in Robotics from the Robotics Institute, Carnegie Mellon University, USA in 2004, and M.Eng. and B.Eng. degrees in Mechanical Engineering from NTU in 1999 and 1997 respectively. He is currently an Associate Professor at the School of Mechanical and Aerospace Engineering, NTU, and concurrently as the Executive Director of the Rehabilitation Research Institute of Singapore, a joint collaboration by NTU, A*STAR and National Healthcare Group.
Prof. Wei Tech Ang's research focuses on robotics technology for biomedical applications, which include surgery, cell micromanipulation, rehabilitation, and assistive technology. His work has been well funded, published and cited, and resulted in several inventions licensed to the industry and spin-off companies.

Data-driven Assistive Robots

Assistive robots hold great potential in assisting people with disabilities to perform a variety of tasks in rehabilitation and activities of daily living. One key challenge encountered by assistive robots is that every disability is different. This requires that the Human-Robot Interface (HRI) be intelligent, intuitive, and safe for successful deployment in collaborative tasks with humans. This talk introduces our work in the development of several types of assistive robots with user-centric intelligent HRI targeting users across a wide spectrum of ability levels.

Date	11 August 2023 (Friday)
Time	09:30 – 10:30 hrs.
Venue	Auditorium, 1st floor of Convention Center (CC) (Building 14)

Time	09:30 – 10:00 hrs.

Prof. Ta-Sen Wei

President of Taiwan Rehabilitation Engineering and Assistive Technology Society (TREATS), Taiwan

Prof. Dr. Ta-Sen Wei is a specialist in physiatry, having worked in a medical center for nearly 40 years. He currently serves as the president of the Taiwan Society of Rehabilitation Engineering and Assistive Technology (TREATS), the chief of the Rehabilitation Medicine Research Center at Changhua Christian Hospital, and a board member of the Taiwan Association of Physical Medicine and Rehabilitation.

R&D of assistive devices, Prof. Wei has published hundreds of papers and holds dozens of patents in rehabilitation medicine. He has a wealth of clinical experience in combining physiatry and rehabilitation engineering to enhance patients' functionality, life independence, and quality of life.

Bridging the Gap: Integrating Physiatry and Rehabilitation Engineering for Optimal Patient Outcomes

This speech explores the integration of Physiatry and Rehabilitation Engineering to address challenges in patient rehabilitation and enhance care outcomes. Physiatry, dedicated to restoring functional ability for those with physical impairments, faces hurdles including service accessibility, personalized care, and technological utilization. Rehabilitation Engineering, focused on applying innovative assistive technologies, can tackle these issues by customizing rehabilitation plans, enhancing mobility through advanced devices, facilitating tele-rehabilitation, and integrating AI for personalized care. By bridging this gap, we envision a transformed landscape of rehabilitative care that optimizes patient outcomes, enhances access, and revolutionizes treatment methodologies. This discussion aims to stimulate a dialogue that paves the way for a new standard in rehabilitative care, leveraging technological advancements for patient-centric solutions.

Time	10:00 – 10:30 hrs.

Prof. Dr. Luc de Witte

President of Global Alliance of Assistive Technology Organizations (GAATO)

Luc de Witte is currently president of the Global Alliance of Assistive Technology Organisations (GAATO). He works as a professor of Technology for Healthcare at The Hague University of Applied Sciences in the Netherlands. Earlier he worked as a professor at the University of Sheffield in the UK, and at Maastricht University and Zuyd University of Applied Sciences in the Netherlands. Luc trained as a medical doctor but has always worked on practice-oriented research in the field of rehabilitation and long-term care, including elderly care, care for people with mental or physical disabilities and care for people with chronic diseases. He has been active in the field of assistive technology for more than 25 years, co-authored more than 300 research papers and supervised more than 35 PhD students in different countries.

Advancing the field of Assistive Technology; global challenges and opportunities search papers and supervised more than 35 PhD students in different countries.

According to the WHO 2.5 billion persons in the world require some kind of assistive technology, and this number is expected to grow. The vast majority of these persons do not have access to assistive technology and thus face major challenges in their everyday lives. At the same time our world is increasingly filled with all kinds of technology to support our lifestyle and enable us to live our lives to the fullest. This feels paradoxal: huge needs on the one hand, rapid technological advances on the other, and yet there is this huge gap. In this presentation I will first talk about the global need for assistive technology. Then I will discuss the many opportunities developments in technology offer to bridge the gap mentioned, but also some challenges we face when trying to bridge the gap. I will finish with a call for international collaboration in this field, including a short description of the ambitions and actions of the Global Alliance of Assistive Technology Organisations (GAATO) to stimulate international collaboration.

PANEL SESSIONS

Date	9 August 2023 (Wednesday)
Time	12.00 – 12:30 hrs.
Venue	1st floor, Sirindhorn Science Home (SSH) (Building 18)


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Panelists

1. **Mr. Monthian Buntan**
   Member of the Senate of Royal Thai Government and former United Nations Committee on the Rights of persons with Disabilities
2. **Aiko Akiyama**
   Social Affairs Officer, Social Development Division, United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)

Moderator
Dr. Kamolpun Punpuing
Research Strategic Planning Management Division, Assistive Technology and Medical Devices Research Center, A-MED, NSTDA, Thailand

Persons with disabilities, who comprise an estimated 16 per cent of the global population, are one of the largest minority groups in the world. In Asia and the Pacific, this translates to more than an estimated 750 million people, including those with physical disabilities, those who are blind or experience low vision, Deaf, hard of hearing, and those with learning disabilities, cognitive/developmental disabilities, psychosocial disabilities, deafblind, and those with multiple disabilities. Persons with disabilities face numerous barriers that restrict their full and effective participation in society on an equal basis with others and are among those at highest risk of being left behind in the development process. This risk is particularly pertinent given rising inequality across the world, which has a disproportionate impact on persons with disabilities. For instance, the increase of income inequality puts persons with disabilities – who already are less likely to be employed

compared with their peers without disabilities – in a particularly vulnerable position. Furthermore, the rising inequality with regard to access to basic services such as education opportunities often results in persons with disabilities falling behind, as evidenced by their relatively low rates of completing secondary education, gaining full time employment and securing a decent income compared to those without disabilities. The inadequacy and lack of accessible built environments, accessible information and communication, including information and communications technology (ICT), and accessible services are fundamental barriers that widen this inequality. 'Accessibility', in simple terms, is the breaking down of the barriers across these sectors that prevent persons with disabilities – and the broader population – from participating in society on an equal basis with others.

Time 09:30 – 11.00 hrs., Auditorium, SSH


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Panelists

1. **Dr. Suporntum Mongkolsawad**
   Secretary General of The Redemptorist Foundation for People with Disabilities, Thailand
2. **Mr. Withayoot Bunnag**
   President of National Association of the Deaf in Thailand
3. **Dr. Non Arkaraprasertkul**
   Senior Expert in Smart City Promotion, Digital Economy Promotion Agency of Thailand

Moderator
Issararat Kruahongs
Assistant to the National Broadcasting and Telecommunication Commission (NBTC) Commissioner

Who benefits from Digital Assistive Technology?

This event will share and discuss how assistive technology improves an individual's functioning and independence, thereby promoting their well-being. Assistive technology can have a positive impact on the health and well-being of a person and their family, as well as broader socioeconomic benefits.

Time	09:30 – 11.00 hrs., Lecture 2, SSH

Panelists

1. **Prof. Jiunn-Horng Kang**
   Dean of College of Biomedical Engineering, Taipei Medical University, Taiwan,
2. **Assoc. Prof. Nuntachai Thongpanee**
   Dean of College of Biomedical Engineering, Rangsit University, Thailand
3. **Assoc. Prof. Dr. Sumet Umchid**
   Assistant to the President for Academic Promotion and Educational Quality Assurance, King Mongkut's University of Technology North Bangkok, Thailand
4. **Asst. Prof. Dr.scient.med. Phornphop Naiyanetr**
   Department of Biomedical Engineering, Faculty of Engineering, Mahidol University, Thailand
5. **Dr. Wongwit Senevongse**
   Head of Biomedical Engineering Working Group, Council of Engineers of Thailand/Head of Postgraduate Biomedical Engineering Program, Department of Biomedical Engineering, Faculty of Engineering, Srinakharinwirot University, Thailand

Moderator
Dr. Jeerapond Leelawattanachai
Researcher of Research Team Responsive Material and Nanosensor Research Group, National Nanotechnology Center (NANOTEC), NSTDA, Thailand

Marching towards Medical Hub: Certifications of Biomedical Engineering

This session is for all Biomedical Engineers and all stakeholders in the healthcare industry as well as the visitors and investors from foreign countries. Biomedical Engineering plays a vital role in advancing healthcare and raising hospital standards. By applying engineering principles to healthcare, biomedical engineers contribute to the development and improvement of medical devices, diagnostic tools, and treatment procedures. Their expertise ensures the safety, effectiveness, and efficiency of these technologies, benefiting patients and

healthcare providers alike. Certification of Biomedical Engineers brings several advantages to the community. It ensures a high level of competence, expertise, and adherence to ethical standards. Certified professionals enhance patient safety, promote quality healthcare delivery, and contribute to the overall well-being of the community by driving innovation and maintaining the highest standards of care. This session will shed light on the success story of BME in Taiwan and the discussion will give details on the certification programs in Thailand which provide comprehensive evaluation and validating the expertise of biomedical engineers. This standardization instills confidence in employers, healthcare institutions, and the public, ensuring that certified professionals meet the highest standards of practice.

Date	11 August 2023 (Friday)
Time	11:00 – 12:30 hrs.
Venue	3rd floor, Convention Center (CC) (Building 14)


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Panelists

1. **Dr. Somboon Arsirapoj**
   Director of Punyawutikorn School
   The Foundation for the Welfare of Mentally Retardation of Thailand under the Royal Patronage of Her Majesty the Oueen, Thailand
2. **Wachira Srikoom, Ph.D.**
   Senior Science Educator and Director of Human Resource and Organization Development, The Institute for the Promotion of Teaching Science and Technology (IPST), Thailand
3. **Assoc. Prof. Dr. Panrasee Ritthipravat**
   Director of Artificial Intelligence in Medicine Lab, Department of Biomedical Engineering, Mahidol University, Thailand

Moderator

Assoc. Prof. Dr. Boonserm Kaewkamnerdpong
Head of Human Factors Engineering Research Group Biological Engineering Program, Faculty of Engineering, King Mongkut's University of Technology Thonburi (KMUTT), Thailand

Gap Analysis in Educational System for people with Disabilities

The panel session titled "Gap Analysis in Educational System for people with Disabilities" aims to share and discuss real experiences in schools which provide teaching for people with disabilities. Difficulties in setting up effective teaching for each person/child are presented. Current technologies designed for people with disabilities are discussed and shared existing gaps in order to be used in schools. Gap analysis in the current educational system is presented. Bridging the existing gaps is finally concluded.

Date	11 August 2023 (Friday)
Time	11:00 – 12:30 hrs.
Venue	3rd floor, Convention Center (CC) (Building 14)

Panelists


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1. **Ms. Natcha Rojviroj**
   CEO and Industrial Designer of BLIX Pop Company Limited, Thailand
2. **Mr. Methasit Kiatchaipha**
   Managing Director of Great Tech and Innovation Company Limited, Thailand
3. **Mr. Teerapong Smutassadong**
   Managing Director of CMED Medical Company Limited, Thailand
4. **Mr. Warath Sitlaothaworn**
   CEO and Design Engineer of Medicubed Company Limited, Thailand
5. **Dr. Thanapol Luckanawat**
   Managing Director of Peony Development Company Limited, Thailand
6. **Mr. Yuttapong Aunhatthaweesup**
   School of Information Technology of King Mongkut's University of Technology Thonburi, Thailand

Moderator

Pornprom Ateetanan, Ph.D.
Deputy Division Director of Strategic Partnership Development Section, Strategic Partnership Development and Evaluation Division, NECTEC, NSTDA, Thailand

From Contest to Commerce

Since 2008, Thailand has supported more than 100 teams to join the Global Student Innovation Challenge (gSIC), held as part of the International Convention on Rehabilitation Engineering and Assistive Technology (i-CREATe), averaging 10 teams per year. Some student teams have proceeded to a stage of real-world utilization through commercialization.

"From Contest to Commerce" session aims to share with audience some successful designs and products from previous gSIC competitions. The audience will learn their paths to success, as well as several challenges they have been facing. From prototypes to products, from students to company owners, they and their products have impacted a great number of users. This is good evidence that i-CREATe has put together a fruitful platform to deliver favorable outcomes to society.

WORKSHOP SESSIONS

Date	10 August 2023
Time	09:00 – 11:00 hrs.
Venue	1st floor, Lecture 1, Sirindhorn Science Home (SSH) (Building 18)

About the presenter

Hiroto Hayashi

Clinical Educator/Specialist of Sunrise Medical (Asia-Pacific region)

Hiroto is a physiotherapist who is taking on a clinical educator/specialist role specifying in Mobility devices within the Asia-Pacific region for Sunrise Medical. He has over 14 years of clinical experience working especially with neuromuscular disease and pediatric populations. He has a passionate drive to better people's lives and his focus is utilizing assistive devices and modalities to improve mobility and function for his patients. He has a balanced track record of integrating research and evidence to clinical practice and is both a research committee member within the International Organization of Physiotherapists in Pediatrics, Japanese Society of Physical Therapy for Pediatrics, and is also a Japanese Duchenne muscular dystrophy physical therapy guideline member. He conducts over 15 yearly webinars, seminars and lectures concerning mobility devices and is an adjunct lecturer for Kitasato University and Hokkaido High technology college. His previous conference presentation experiences include a Seminar and research presentation at the International Society of Physical and Rehabilitation Medicine, 3 presentations at World Physical therapy congress, 1 presentation at Neurorehabilitation congress as well as holding seminars at the International Home and Rehabilitation Exhibition, Welfare trade expo, Barrier Free / Post-Acute Medicine Fair / Nursing Next / Home Medical Care expo concerning mobility devices such as wheelchair seating and powered wheelchairs.

Choosing the optimum wheelchair. Why can you benefit from a light wheelchair?

Selecting an optimum and suitable wheelchair is not always simple. Everybody has their specific and particular needs. Therefore, choosing one wheelchair over another will depend on three very personal factors: adequacy for the user, for the use, and for the environment.

Clinical practice guidelines suggest, a fully configurable, ultra-lightweight wheelchair is recommended for an individual who uses a manual wheelchair for independent mobility. The ability to fully tailor a wheelchair for an individual will have an effect on positioning/postural support, ease of propulsion, and wheelchair stability and maneuverability. There are different choices possible in lightweight wheelchair frames and it is important to understand the similarities and differences in the wheelchair frames so that the initial choice of wheelchair frame type is optimal. Rigid and folding frame active wheelchairs are lighter than standard wheelchairs and use components made of lightweight aluminum, carbon fiber and titanium. They have minimal rolling resistance, making them easier to propel. The optimal lightweight wheelchair has the lowest expenditure, high durability, easily carried or transported and can help prevent injuries derived from repetitive loading, misplacement of the pelvis and spine. This workshop will cover configuration and frame differences that affect clinical application of wheelchair selection, specifically focusing on light wheelchairs based on recent clinical evidence.

Date	11 August 2023
Time	09:30 – 12:30 hrs.
Venue	4th floor, CC404, Convention Center (CC) (Building 14)

About the presenters

Prof. Kenneth Fong
Professor of Department of Rehabilitation Sciences, The Hong Kong Polytechnic University (PolyU), Hong Kong, and Director of Research Centre for Assistive Technology, PolyU, Hong Kong

Prof. Wei Tech Ang
Executive Director of Rehabilitation Research Institute of Singapore (RRIS), Singapore

Dr. Prayook Jatesiktat
Research Fellow of Rehabilitation Research Institute of Singapore (RRIS), Singapore

Markerless Mocap in Healthcare, the Translational Possibilities

This workshop will bring the audiences through the journey of human movement measurement starting from various available tools and techniques of how they work. We will also discuss why none of them have been used pervasively in clinical practice. In this workshop, you will be able to experience a markerless motion capture workflow in action, understand how it works, and even try it yourself as a subject. Then, in the sharing session among audiences, we will brainstorm to find out the possibilities of using the markerless motion capture system to enhance the work in your domain.

Date	11 August 2023
Time	09:30 – 12:30 hrs.
Venue	4th floor, CC405, Convention Center (CC) (Building 14)

About the presenter

Hiroto Hayashi
Clinical Educator/Specialist of Sunrise Medical (Asia-Pacific region)

Wheelchair cushions. Why, who and how?

Wheelchair seat cushions are an essential part of a wheelchair and profoundly affect the user's daily living and health. Cushions not only improve comfort, safety from skin damages derived from prolonged sitting, but directly influence the seating position. Although cushions may look similar in design on the outside, the materials used on the inside can have a significant impact on their performance. Current cushions are enveloped with the latest cutting-edge materials and design technology such as CryoTM to address skin protection from pressure, shearing, and the most recently recognized "Micro-climate" issues.

Wheelchair cushions are designed to address specific seating goals. Each design principle has specific clinical benefits and considerations. Therefore, understanding the design and how certain materials perform is critical in achieving the desired benefits and will improve the clinician's ability to select a cushion based on their patient's goals. This workshop will cover various design principles and materials that are used in wheelchair cushions and the clinical application that should be considered when choosing a cushion based on recent findings in seating technology.

Date	11 August 2023
Time	13:30 – 15:00 hrs.
Venue	4th floor, CC404, Convention Center (CC) (Building 14)

About the presenters

Kulpriya Wechkama and Kornanong Yuenyongchaiwat
Department of Physical Therapy, Faculty of Allied Health Sciences, Thammasat University, Thailand

Development of Walking Tests Application for Physical Performance Evaluation

The evaluation for physical performance such as walking test is an important for measuring of a person's well-being. Nowadays, medical technology plays a significant role in the evaluation of health status. Nevertheless, medical devices are not easily accessible and services, or the devices are intended for research purposes only and are inconvenient for clinical use. Therefore, this workshop aims share audiences the development of a prototype of physical performance assessor device with a mobile application and explore the correlation between standard 6-minute walk test and wearable sensor 6-minute walk test in healthy adults. Innovative prototype walking wearable sensor with a mobile application can effectively evaluate physical performance in healthy people.

Date	11 August 2023
Time	15:30 – 17:00 hrs.
Venue	4th floor, CC404, Convention Center (CC) (Building 14)

About the presenters

Chanakan Chitjamnongchai and Kornanong Yuenyongchaiwat
Department of Physical Therapy, Faculty of Allied Health Sciences, Thammasat University, Thailand

Virtual Reality Exercise for Improving Cardiovascular Performance

Virtual reality exercise (VR) has been used in combination with home-based exercise cardiac rehabilitation (CR) as an alternative for CR in cardiac outpatients. However, the safety features, the specified exercise program, and the results have certain limitations. Therefore, this workshop aims to showcase the development of a virtual reality exercise program for improving cardiovascular endurance, pulmonary function, respiratory muscle strength, and quality of life in patients with cardiovascular disease and patients with open heart surgery phase II.

Date	11 August 2023
Time	13:30 – 16:30 hrs.
Venue	4th floor, CC405, Convention Center (CC) (Building 14)

About the presenter

Mr. Somchai Rungsilp
Community Development Manager of Community Development Department
Asia-Pacific Development Center on Disability (APCD)

Mr. Somchai Rungsilp has long experience working on community-based inclusive development (CBID) and community-based rehabilitation (CBR). Since the disaster risk reduction becomes the significant life skill, knowledge, and awareness for everyone including persons with disability, then he would like to promote disability inclusive disaster risk reduction (DIDRR) at APCD as one of key approaches introduced by APCD in the Asia-Pacific region since 2018.

He was trained in particularly on DIDRR in Japan and conducted various workshops for Thai and ASEAN participants on this topic.

He also served as volunteer for promoting national and local NGOs for community development and vulnerable people in Thailand. Those NGOs he is working for include Foundation for Children with Disabilities, House of Hope Foundation and Volunteers for Development Association

Promoting Disaster Risk Reduction (DDR) for All

Asia-Pacific Development Center on Disability (APCD) organizes a workshop on Disaster Risk Reduction (DRR) for All which aims to raise awareness and enhance basic concept and principles of DRR for All to persons who are interested, community people, and staff members who are working on humanitarian sectors. The workshop will provide knowledge about the basic concept and principles of DRR in general, and some samples of how to support various types of persons with disabilities towards different kinds of disaster in 3 main stages (before, during and after occurrences of disasters).

PAPER/POSTER SESSION INFORMATION

All chairs 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 10 minutes has been allocated for each oral presentation, including time for questions (7-min presentation and 3-min questions and answer) Session chairpersons will strictly enforce this limit. Paper and poster presenters are requested to keep their presentations within the time limits stated. Presentations must be carried out using MICROSOFT POWERPOINT.

For paper and poster 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 their session. Or presenters can upload their files at the Secretary Desk, 1st floor, SSH, on 9 August 2023, 14:00 – 16:00 hrs.

All posters must be shown at the conference on paper, vinyl or fabric of A1 size. Poster presenters will be provided with a poster board with your poster number on top. The set up time is anytime of conference time but it should not be later tha 10 August 2023, and it should be taken down on 11 August 2023 at 17:00 hrs. It is your own responsibility to bring necessary equipment such as scissors or gummed tape, etc.

PAPER SESSIONS

Session	PP1/PO1 – Assistive Technology
Date	11 August 2023 (Friday)
Time	09:30 - 10:30 hrs.
Venue	CC403 Room, 4th floor of Convention Center Building

PP1.1
09:30 - 09:40

Automatic Waiting Audio System on Remote Communication for Persons with Multiple Disabilities

Sukationg Phuphatana, Chatchawarn Hansakunbuntheung, Sarinya Quilitz

Assistive Technology and Medical Devices Research Center (A-MED), National Science and Technology Development Agency (NSTDA), Thailand

PP1.2
09:40 - 09:50

The Development of Thai Real-time Captioning Service

Ananlada Chotimongkol, Nattanun Thatphithakkul, Woottipong Boonma, Dechawat Chuengjatupornchai

Assistive Technology and Medical Devices Research Center (A-MED), National Science and Technology Development Agency (NSTDA), Thailand

PP1.3
09:50 - 10:00

Using touch sensor and vision feedback to adapt skewering strategy for robust assistive feeding

Samruddhi Shrivastava[1], Neha P. Garg[2], Cidy Tang[3], J-Anne Yow[2], Wei Tech Ang[2], Wei Lin Leong[3]

[1]Nanyang Technological University (NTU), [2]Rehabilitation Research Institute of Singapore, NTU, [3]Leong Research Group, NTU, Singapore

Session	PP1/PO1 – Assistive Technology
Date	11 August 2023 (Friday)
Time	09:30 - 10:30 hrs.
Venue	CC403 Room, 4th floor of Convention Center Building

PO1.1
10:00 - 10:10

Chang of gross motor function and reach movement after NEURO HALFIT

Ogasa Yuusuke[1], Aoki Kiyoshi[2], Suemitsu Shigeru[2], Obata Atsushi[2]

[1]Okayama Robo Care Center Co., Ltd., Japan, [2]Asahigawa-so Rehabilitation and Medical Center, Japan

PO1.2
10:10 - 10:20

Enhancing Social Connection for People with Physical Disabilities in Online Community A Chinese Perspective

Hyeon-Cheol Kim, Ph.D., Zong-Yi Zhu, Ph.D

School of Business Administration, College of Business and Economics, Chung-Ang University, Seoul, South Korea

Session	PP2/PO2 – Rehabilitation Technology
Date	11 August 2023 (Friday)
Time	11:00 - 12:30 hrs.
Venue	CC403 Room, 4th floor of Convention Center Building

PP2.1
11:00 - 11:10

Application and research progress of transcutaneous electrical nerve stimulation in pain treatment

Jiahao Du[1], Ping Shi[2], Hongliu Yu[1]

[1]Institute of Rehabilitation Engineering and Technology, University of Shanghai for Science and Technology, Shanghai, China, [2]Shanghai Engineering Research Center of Assistive Devices, Shanghai, China

Session	PP2/PO2 – Rehabilitation Technology
Date	11 August 2023 (Friday)
Time	11:00 - 12:30 hrs.
Venue	CC403 Room, 4th floor of Convention Center Building

PP2.2
11:10 - 11:20

Design and Control System of a New Hip-Knee Integrated Intelligent Prostheses

Shengli Luo, Yixi Chen, Meng Fan, Hongliu Yu

[1]Institute of Rehabilitation Engineering and Technology, University of Shanghai for Science and Technology, Shanghai, China, [2]Shanghai Engineering Research Center of Assistive Devices, Shanghai, China

PP2.3
11:20 - 11:30

Effect of restricting ankle push-off on overground exoskeleton assistance – a preliminary study

Alex Anchivilca Baltazar[1], Benjamin Hannol von Snarski[1], Nilp Amin[1], Joshua Lai[1], Justin Fong[2], Camila Shirota[3], Alejandro Melendez-Calderon[1,4,5]

[1]School of Information Technology and Electrical Engineering, The University of Queensland, Australia, [2]Department of Mechanical Engineering, The University of Melbourne, Australia, [3]HabITec, The Hopkins Centre, Griffith University, Australia, [4]School of Health and Rehabilitation Sciences, The University of Queensland, Australia, [5]Jamieson Trauma Institute, Metro North Health, Brisbane, Australia

PP2.4
11:30 - 11:40

Heuristic vision-based terrain recognition for lower limb exoskeletons

Manoj Ramanathan[1], Luo Lincong[1], Foo Ming Jeat[1], Chiam Chye Hsia[1], Yau Wei-Yun[2], Ang Wei Tech[1]

[1]Rehabilitation Research Institute of Singapore, Nanyang Technological University (NTU), Singapore, [2]I2R, A-STAR, Singapore

PP2.5
11:40 - 11:50

The development of a Cluster-based Motion Capture system for Upper-limb Stroke Rehabilitation

Philip Rowe, Madison R. Asbury, Swabra Farzia, Paveekorn Supteranon

The Sir Jules Thorn Centre for the Co-creation of Rehabilitation Technology, Department of Biomedical Engineering, University of Strathclyde, Glasgow, United Kingdom

Session	PP2/PO2 – Rehabilitation Technology
Date	11 August 2023 (Friday)
Time	11:00 - 12:30 hrs.
Venue	CC403 Room, 4th floor of Convention Center Building

PO2.1
11:50 - 12:00

Comparing Effectiveness of Piston Device for Finger and Stretching for Hand Spasticity in Stroke Patients

Runhong Yao[1], Soma Mizuno[2], Ryoya Shibasaka[2], Yoshifumi Morita[2], Hirofumi Tanabe[3]

[1]Nihon Institute of Medical Science, Japan, [2]Nagoya Institute of Technology, Japan, [3]Shonan University of Medical Sciences, Japan

PO2.2
12:00 - 12:10

The Effect of PTMD Exercise on Cognitive and Physical Function in the Elderly

Runhong Yao[1], Kouji Yamada[2], Yoshifumi Morita[3]

[1]Nihon Institute of Medical Science, Japan, [2]Fujita Health University, Japan, [3]Nagoya Institute of Technology, Japan

PO2.3
12:10 - 12:20

Visual Cueing Promotes Gait Rehabilitation in People with Parkinson's Disease: A Systematic Review and Meta-analysis

Phuc Thi Mai[1], Rou-Shayn Chen[1,2], Hsiao-Lung Chan[1,3], Tsung-Hsun Hsieh[1], Ya-Ju Chang[1],

[1]School of Physical Therapy and Graduate Institute of Rehabilitation Science, College of Medicine, Chang Gung University, Taoyuan, Taiwan,

[2]Department of Neurology, Chang Gung Memorial Hospital, Linkou, Taoyuan, Taiwan, [3]Department of Electrical Engineering, College of Engineering, Chang Gung University, Taoyuan, Taiwan

PO2.4
12:20 - 12:30

VR Accessible Home Designer

Marcus Ng CK[1], Serena Ng Sw[1], Jez Cheng L[2], Alison Kwok PK[2], Alvin Lee YC[2]

[1]Tung Wah College, Hong Kong, [2]Angry Shiba Studio Interactive Ltd., Hong Kong

Session	PP3/PO3 – Biomedical Science and Technology
Date	11 August 2023 (Friday)
Time	13:30 - 15:00 hrs.
Venue	CC403 Room, 4th floor of Convention Center Building

PP3.2
13:30 - 13:40

A New, Simple, Inexpensive System for Measuring Foot Movement with Widespread Applications in the Rehabilitation Clinic

Ping Yang[1], Philip Rowe[2]

[1]China Rehabilitation Science Institute, China, [2]University of Strathclyde, United Kingdom

PP3.3
13:40 - 13:50

Emergency Telemedical Operation System for Prehospital Emergency Care

Pratana Kukieattikool[1], Thanachai Thongkum[1], Surapa Thiemjarus[1], Piruin Panichphol[1], Watcharakon Noothong[1], Porntipa Choksungnoen[1], Jatuporn Chinrungrueng[1], Kitti Wongthavarawat[1]

[1]Health Innovation and Information, Assistive Technology and Medical Devices Research Center, National Science and Technology Development Agency, Thailand

PP3.4
13:50 - 14:00

Investigation of Modeling Differences between OpenSim and Visual3D for Gait Analysis of Healthy Gait

Beth Eng Wan Xuan[1], Chan Sherwin Stephen[2], Henry Johan[2], Lim Lek Syn[2], Zuo Bingran[2], Ang Wei Tech[2]

[1]National University of Singapore, [2]Rehabilitation Research Institute of Singapore, National University of Singapore, Singapore

PP3.5
14:00 - 14:10

Markerless Mocap for Active Shoulder Range of Motion Measurement in a Clinic Room - a Pilot Trial

Prayook Jatesiktat[1], Wee Sen Lim[1], Jun Liang Lau[1], Siaw Meng Chou[2], Denny Lie Tijauw Tjoen[3], Wei Tech Ang[1]

[1]Rehabilitation Research Institute of Singapore (RRIS), Nanyang Technological University, Singapore, [2]School of Mechanical & Aerospace Engineering, Nanyang Technological University, Singapore, [3]Singapore General Hospital

Session	PP3/PO3 – Biomedical Science and Technology
Date	11 August 2023 (Friday)
Time	13:30 - 15:00 hrs.
Venue	CC403 Room, 4th floor of Convention Center Building

PP3.6
14:10 - 14:20

Nirun - Smart Health Management System for Senior Nursing Home

Jantakarn Makma[1], Piruin Panichphol[1], Porntipa Choksugneon[1], Surapa Thiemjarus[1], Thanachai Thongkum[1], Tanakorn Sununtachaikul[1], Jatuporn Chinrungrueng[1], Watcharakon Noothong[1], Kitti Wongthavarawat[1]

[1]Health Innovation and Information, Assistive Technology and Medical Devices Research Center, National Science and Technology Development Agency, Thailand

PP3.7
14:20 - 14:30

Revisiting sensory impairment- a robotic-based training approach with chronic stroke survivors, Singapore

Ananda Sidarta[1], Yu Chin Lim[1], Wee Keong Kuah, Christopher[2], Yong Joo Loh[3], Wei Tech Ang[1]

[1]Rehabilitation Research Institute of Singapore, Nanyang Technological University, Singapore, [2]Centre for Advanced Rehabilitation Therapeutics (CART), Tan Tock Seng Hospital, Singapore

[3]Department of Rehabilitation Medicine, Tan Tock Seng Hospital, Singapore

PO3.2
14:30 - 14:40

Establishment and Implement of Smart Assistive Technology for Dementia Care and Its Socio-Economic Impacts

Hsiao-Chuan Liu[1], Kai-Siang Ding[2], Yu-Fan Su[2]

[1]Graduate Institute of Information Management, National Taipei University, Taiwan, [2]Department of Computer Science and Information Engineering, National Taipei University, Taiwan

GLOBAL STUDENT INNOVATION CHALLENGE (gSIC 2023)

The Global Student Innovation Challenge (gSIC) is an annual event held at the International Convention on Rehabilitation Engineering and Assistive Technology (i-CREATe). It provides a platform to encourage students from all over the world to compete with one another in developing creative and innovative devices or solutions to improve the quality of living of elderly and people with disabilities, and to improve the quality of professional practice in rehabilitation. It showcases the extraordinary talents of these students while providing them the opportunity to work with clients and clinicians to develop these innovative ideas. There are 2 categories in this challenge: Design and Technology.

Design Category

Students are expected to apply User-Centered Design process to produce a solution that makes life easier for its users or enhances the user experience (UX) or improves the quality of professional rehabilitation practice. The solution may or may not be technology based.

Technology Category

Students are expected to apply principles in Engineering and Information Technology to design and implement Assistive and Rehabilitation Technology solutions to address the issues/problems faced by the needy, their caregivers and clinicians. The solution must have engineering or technological components.

There are 2 rounds of judging: oral presentation and prototype demonstration.

Oral Presentation

Venue: Lecture 1 & Lecture 2, 1st floor of Sirindhorn Science Home Building
Date/Time: 9 August 2023 / 10:30-15:00 hrs.
Format: A 5-minute computer and/or video presentation key idea(s) of the project, followed by 5-minute Q&A

Prototype Demonstration

Venue: Grand Hall, 1st floor of Convention Center Building
Date/Time: 9 August 2023 / 15:00-18:00 hrs.
Format: A 5-minute demonstration of prototype, followed by a 5-minute Q&A

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

Poster and Prototype Display

All teams are required to display their poster (A1 size) and protype at Grand Hall on the 1st floor of Convention Center Building, Exhibition Zone throughout the convention duration (9-11 August 2023). All teams must present during judging at their respective booth on 9 August 2023 and the winning teams must present during VIP visit from 14:30 – 16:30 hrs. on 10 August 2023.

Awards

The judges will select the top 3 teams as well as 2 teams that deserve merit in each category.

Gold Award Prize 1,400 USD with a trophy and certificates for all members
Silver Award Prize 700 USD with a trophy and certificates for all members
Bronze Award Prize with 350 USD a trophy and certificates for all members
Merit Awards (two per category) A trophy and certificates for all members

Other Awards

The judges will select 3 other awards in each category, as well as Peers' Choice Award and Public's Choice Award

Best Presentation Award

A trophy and 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

A trophy and certificates for all members
The awards will be decided by the panel of judges based on the poster part of the judging criteria.

Best Prototype Award (Technology) / Best Ergonomic Award (Design)

A trophy and certificates for all members
The award will be decided by the panel of judges based on the prototype part of the judging criteria.

Peers' Choice Award

A trophy and certificates for all members
The award is to be decided by the gSIC 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 cast on the morning of 11 August 2023.

Public's Choice Award

A trophy and certificates for all members
The award is to be decided by the participants attending the conference. Upon registering for the conference, each visitor will be given a voting QR scan where they have to choose their favorite team after visiting the gSIC booths.

The results of the top 3 winning teams of each category will be announced at the Opening Ceremony on 10 August 2023 from 13:30 - 14:30 hrs. at the Auditorium Room on the 3rd floor of Convention Center Building. The other awards will be announced at the adjournment on 11 August 2023 from 16:00 - 16:30 hrs. at Auditorium Room on the 3rd floor of Convention Center Building.

Team List & Time to Present

All students please participate in the welcome remarks and the Signing Ceremony of CREATe Asia members from 09:30 - 10:00 hrs. on the 1st floor, Auditorium Room of Sirindhorn Science Home

All teams have to finish uploading their file of presentation before the oral presentation session begins. For Design Category, judges and students should participate in Lecture 1 Room of Sirindhorn Science Home Building, while for Technology Category, judges and students should participate in Lecture 2 Room of Sirindhorn Science Home Building. At 10:30 hrs. on 9 August 2023, each session will be started. A moderator will introduce the panel of judges and then the oral presentation will begin.

Team List: Design Category (16 teams)

Code	Project Title	Institute	Country
D01	2 Care	Tunghai University	Taiwan
D02	Adjustable Patient Lift Sling	Sungaikolok School	Thailand
D03	Bag to Back	Department of Rehabilitation Science, The Hong Kong Polytechnic University	Hong Kong
D04	Diabetic Foot Bathroom Scale (DF-Scale)	Tunghai University	Taiwan
D05	EASYSULIN	Department of Arts and Design, National Taipei University of Education	Taiwan

Code	Project Title	Institute	Country
D06	Elegant Hanger	Department of Rehabilitation Science, The Hong Kong Polytechnic University	Hong Kong
D07	Gait Training Machine for Children with Cerebral Palsy	Thammasat University	Thailand
D08	iStrike	Institute of Technical Education, ITE College East	Singapore
D09	Key Buddy	Department of Rehabilitation Science, The Hong Kong Polytechnic University	Hong Kong
D10	MSB - The Multipurpose S-shaped Body Brace	Princess Chulabhorn Science High School Satun	Thailand
D11	ReControl: An Intelligent Individualized Energy Conservation System for COVID Long-haulers	Department of Occupational Therapy, Chang Gung University	Taiwan
D12	Smart Chair for the elderly and leg rehabilitation	Kevalee International School	Thailand
D13	Smart grasp training pegboard for stroke patient	Thammasat University	Thailand
D14	Wonderkits	Department of Rehabilitation Science, The Hong Kong Polytechnic University	Hong Kong
D15	PAWA	Faculty of Design (Product Innovation), Ngee Ann Polytechnic	Singapore
D16	EZ Pulle	Institute of Technical Education, College Central	Singapore

Team List: Technology Category (17 teams)

Code	Project Title	Institute	Country
T01	Bicycle warning system for rider with hearing impairment	Setsatian School for the Deaf	Thailand
T02	Dancing with a Smart Self-Driving Powered Wheelchair	National Taiwan University	Taiwan
T03	Diagnosis Application for Parkinson's Disease by Hand Tremor Analysis	Mahidol Wittayanusorn School	Thailand
T04	Diagnose K+	Temasek Polytechnic	Singapore
T05	Dysarthria voice conversion (DVC 3.1 Plus)	Biomedical Engineering, National Yang Ming Chiao Tung University	Taiwan
T06	EyeControlLife	Department of Electronic Engineering, & Department of Creative Product Design, Southern Taiwan University of Science and Technology, and VIS@betterworld lab Experimental Education Institution	Taiwan
T07	fNIRS-based neurofeed-back training for subjects with anxiety (fNIRS: functional near-infrared spectroscopy)	Department of Biomedical Engineering, National Cheng Kung University	Taiwan
T08	Footprint Behavior Analysis, Geofence Automatic Generation, and Position Prediction for Dementia Patients Using Smartwatch GPS Information	Department of Computer Science and Information Engineering, National Taipei University	Taiwan
T09	Gyroscopic Contactless Head Mouse	Shrewsbury International School Bangkok Riverside	Thailand

Code	Project Title	Institute	Country
T10	Hear Guardian	Bodindecha (Sing Singhaseni) School	Thailand
T11	Hip and Knee Joint Integrated Intelligent Prostheses	Institute of Intelligent Rehabilitation Engineering, university of Shanghai for Science and Technology	China
T12	Kotaka EV Electric Car for the Disabled	Nakhonsawan Technical College	Thailand
T13	ListeNatural – computer-vision based low power consumption smart-assisted hearing device with spatial navigation	Department of Biomedical Engineering, National Cheng-Kung University	Taiwan
T14	O-RA (Osteoarthritis Rehabilitation Assistant for the Elderly with deep learning technology)	Prince Royal's College, Thailand	Thailand
T15	Visual interaction-based meal assistance robot	Institute of Intelligent Rehabilitation Engineering, university of Shanghai for Science and Technology, China	China
T16	Smart Vision	School of Engineering – Mechanical Engineering, Institute of Technical Education - College Central	Singapore
T17	Smart Mobility Aid	Institute of Technical Education - College West	Singapore

TECHNICAL TOURS

Tour A

National Science and Technology Development Agency (NSTDA) located in Pathum Thani, Thailand, is entrusted with an important task to accelerate science, technology, and innovation development in Thailand in order to respond to the need of the industry and enhance the country's competitiveness in the global economy, and as a result, making contribution to national economic and social development. Through this tour, 5 focus units will be represented under NSTDA; Neural Signal Processing Research Team (NSP) is part of Artificial Intelligence Research Group (AINRG). NSP focuses on developing brain and neural signal processing technologies to support healthcare and wellness industries.

- *Wearable Technologies Consulting Services (WTCS)* is part of the Engineer Design and Computation (EDC). WTCS provides consultation and support to all Thai companies and manufactures to import or develop wearable devices for health.

- *Biomechanics Research Team (BMCT)* is part of the Biofunctional Materials and Devices Research Group. BMCT works in collaboration with partners to develop medical equipment.

- *Implantable Medical Device Technology (IMT)* is part of the Assistive Technology and Medical Devices Research Center (A-MED). IMT research team is focused on developing non-active implantable medical devices for orthopedics and dental applications.

- *Thailand Captioning Service Center (TCC)* provides a captioning service for both real-time and pre-record contents to create accurate captions for deaf and people with hearing problems.

The Center of Excellence in Creative Engineering Design and Development (CED) was established in 2014. CED was formed under Thammasat University with collaboration across disciplines that included but not limited to engineering, medicine, physical therapy, nursing, and sports science. CED mission is to encompasses the creation of groundbreaking innovations, the advancement of engineering education, the establishment of a collaborative innovation network, and the successful implementation of innovative projects.

A UNESCO World Heritage Site

In 1991, part of Ayutthaya Historical Park was declared a UNESCO World Heritage Site under criteria III as an excellent witness to the period of development of a true national Thai art. The inscribed area covered only 289 ha of the central and southwestern parts of Ayutthaya Island; as a result, only certain groups of historical sites are under UNESCO protection. The sites include Wat Ratchaburana, Wat Mahathat, Wat Phra Sri Sanphet, Wat Phra Ram, and Wiharn Phra Mongkhon Bopit.

Wat Phra Mahathat (Temple of the Great Relics) was one of the most significant temples, located on the historical island. It enshrines the Buddha's relics and was once the residence of the Supreme Patriarch of Buddhism. It is believed to have been built around the 14th Buddhist century (early Ayutthaya period). Wat Mahathat is also a royal temple located near the palace where past Ayutthaya kings performed important ceremonies here. The highlight of Wat Mahathat is a giant Khmer-style chedi containing the Lord Buddha's relics and the treasures of the Ayutthaya Kingdom in the past. Wat Mahathat is also known worldwide for the head of a sandstone Buddha image that is entangled in the roots of a holy Bodhi tree.

Wat Phra Si Sanphet is considered the most important temple of Ayutthaya Kingdom, located inside the compound of the Grand Palace-the foundations of which are still visible-and served as the royal Chapel. It is also regarded as an equivalent of Wat Mahathat in Sukhothai and a model for Wat Phra Sri Ratana Sasadaram (the royal temple of the Emerald Buddha) or Wat Phra Kaew in Bangkok. Originally, King Ramathibohi I (King U-Thong) commanded the construction of the royal house in this area in which King Borom Trai Lokkanat had later granted the use of residence as the royal temple with the aim to facilitate the operations of important royal ceremonies and merit making ceremonies. This royal monastery plays an important role in the history of art and archeology. The remaining debris still evidently portrays how glorious the country was. At the heart of the temple, there are three adjacent Ceylonese (or bell-shaped) pagodas situated on rectangular platforms. It is believed that these platforms were the base of royal houses in the Ayutthaya period.

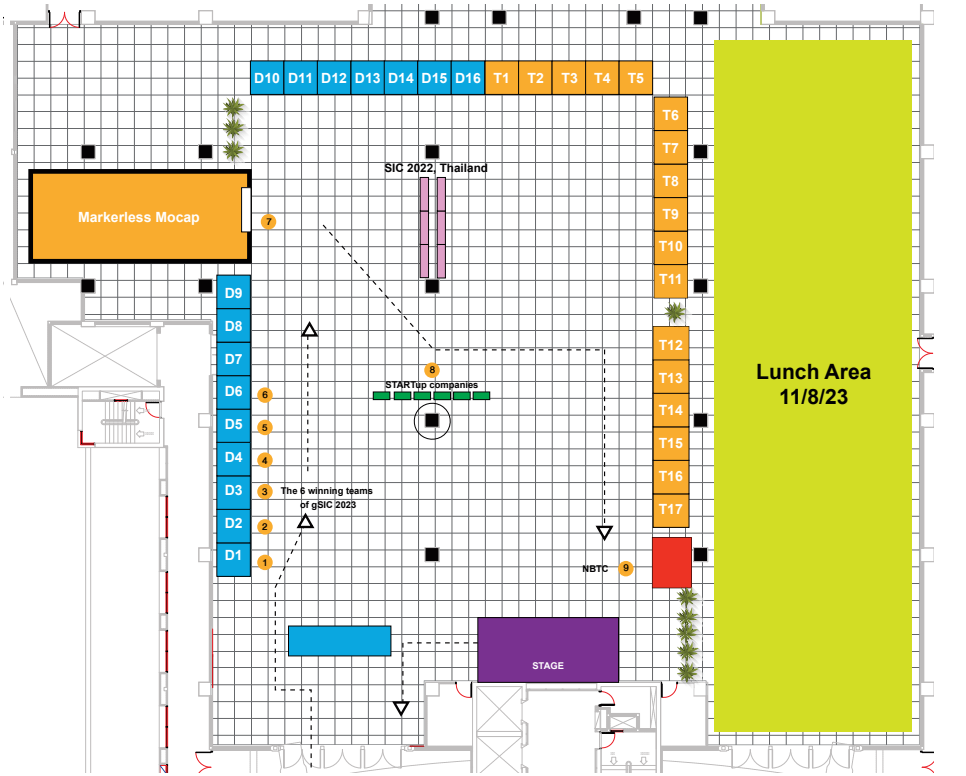
Tour B

Watsanawet Social Welfare Development Center for Older Persons located in Ayutthaya, Thailand, was established in 1987 by His Holiness Somdet Phra Yanasamvara. Later in 2015, WSH was transferred and organized under the Department of Older Persons, Ministry of Social Development and Human Security. Its original aim was to act as a shelter for older people who are being abused. An additional service, a live-in self-support senile house, was added to WSH to provide further support for elderly people who can live independently. With close collaboration with the National Science and Technology Development Agency (NSTDA), WSH has been using new technologies to improve the lives of older people under their care.

Holistic temples in the old capital city of Thailand, Ayutthaya

Taking you back in time to explore the old capital city of Thailand, Ayutthaya. In 1767, Ayutthaya fell to the Burmese. The whole city was burned and destroyed. The city was abandoned until 1950 when historians started to restore all temples in Ayutthaya. One of the active temples where monks reside since 1350, Wat Yai Chai Mongkhon, is well known for Thais to pay homage to King Naresuan the Great. Another one of the most visited sites of Ayutthaya, Wat Chaiwatthanaram. This temple is a replica of the Angkor temple. Both temples were founded, built, and used by the Thai Royal family.

EXHIBITION FLOOR PLAN



Grand Hall, 1st floor of Convention Center (Building 14)

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