# PROGRAM
## REHAB WEEK ZURICH 2011

Rehab Week Zurich 2011 - One week. Three conferences.

INRS 2011 - International Neurorehabilitation Symposium 2011

ICVR 2011 - International Conference on Virtual Rehabilitation 2011

ICORR 2011 - IEEE International Conference on Rehabilitation Robotics 2011

June 27 to July 1, 2011
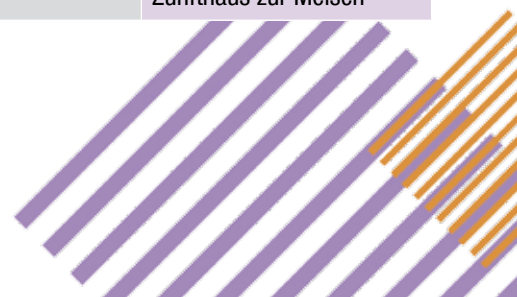ETH Zurich, Science City
Zurich, Switzerland

# Program at a glance

## Monday - June 27, 2011

| INRS | | | | ICVR |
|---|---|---|---|---|
| **08:00 – 09:30**<br>Coffee and registration | | | | **08:00 – 08:30**<br>Coffee and registration |
| **09:30 – 12:00** (G1)<br>Robotics in the rehabilitation of upper limb function in SCI<br>*Armin Curt* | **09:30 – 11:30** (G2)<br>Very early rehabilitation<br>*Andreas Luft* | **09:30 – 10:30** (G3)<br>Non invasive spinal assessment<br>*Cesare Mannhart* | **09:30 – 10:30** (G4)<br>Implementation of robotics in clinical settings<br>*Leslie VanHiel*<br>*Kerstin Baldauf*<br>*Chan Kay Fei* | **08:30-12:00** (HCI, J3)<br>Virtual Reality Technology for the Therapist<br>*Greg Burdea, Albert Rizzo, Patrice Weiss*<br>**09:30-12:00** (HCI, J4)<br>Virtual Reality for Arm Therapy<br>*Andreas Luft* |
| | | **10:30 – 11:00**<br>Coffee break/poster/exhibition | | |
| | **11:30 – 12:30** (G2)<br>Erigo basic<br>*Arash Dodge* | **11:00 – 12:00** (G3)<br>Virtual reality-based rehabilitation with YouGrabber and YouKicker<br>*Oliver Ullmann*<br>*Daniel Kiper* | **11:00 – 12:00** (G4)<br>Lokomat basic<br>Julia Bühlmeier | **08:30-12:00** (HCI, J6)<br>Microsoft Kinect/Primesense Sensing Systems for Virtual Rehabilitation<br>*Belinda Lange & Albert Rizzo* |
| **12:00 – 13:00**<br>Lunch/poster/exhibition | **12:30 – 13:00**<br>Lunch/poster/exhibition | **12:00 – 13:00**<br>Lunch/poster/exhibition | | |
| **13:00 – 15:15** (G1)<br>Robot-supported locomotor training in pediatric neurorehabilitation: application, assessment and achievements<br>*Huub van Hedel* | **13:00 – 14:00** (G2)<br>ArmeoPower basic<br>*Alexander Duschau-Wicke* | **13:00 – 14:00** (G3)<br>Pablo Plus - upper limb rehabilitation<br>*Maik Hartwig* | **13:00 – 14:00** (G4)<br>Lokomat advanced<br>*Julia Bühlmeier* | **13:00 – 13:15** (G5)<br>Conference welcome<br>Kynan Eng, Daniel Thalmann |
| | | | | **13:15 – 14:00** (G5)<br>Podium session 1<br>Sensory impairment |
| | **14:00 – 14:15**<br>Coffee break/poster/exhibition | | | **14:00 – 15:15** (G5)<br>Podium session 2<br>Posture and balance |
| | **14:15 – 15:15** (G2)<br>ArmeoSpring basic<br>*Peter Schenk* | **14:15 – 15:15** (G3)<br>Amadeo - advanced fingerrehabilitation<br>*Goncalo Goncalves* | **14:15 – 15:15** (G4)<br>Valedo basic<br>*Jan Kool*<br>*Eelco Sengers* | **15:15 – 15:45**<br>Coffee break/poster/exhibition |
| **15:15**<br>End of workshops | | | | **15:45 – 17:00** (G5)<br>Podium session 3<br>Post-stroke rehabilitation |
| **15:45**<br>Start social event INRS 2011 hosted by Hocoma | | | | **18:30 – 20:00**<br>Welcome drink<br>Zunfthaus zur Meisen |

## Tuesday - June 28, 2011

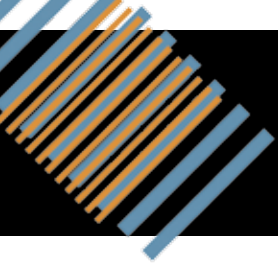| INRS | ICVR |
|------|------|
| **08:30 – 09:00** <br> Welcome coffee and registration | |
| **09:00 – 09:10** (G1) <br> Welcome address | |
| **09:10 – 09:45 Keynote lecture** (G1) <br> Physiological rational for Assist-as-Needed control in facilitation of recovery of stepping <br> *Reggie Edgerton* | |
| **09:45 – 10:20 Keynote lecture** (G1) <br> Virtual Rehabilitation: Emerging opportunities and challenges for promoting access <br> *Skip Rizzo* | |
| **10:20 – 10:50** <br> Coffee break/poster/exhibition | **10:20 – 10:50** <br> Coffee break/poster/exhibition |
| **10:50 – 11:15** (G2) <br> Clinical application of neuroscientifically based interventions for the neurologically disabled patient <br> *Susan Woll, Jan Utley* | **10:50 – 11:50** (G3) <br> Podium session 4 <br> Games for rehabilitation |
| **11:15 – 11:40** (G2) <br> fNIRS monitoring of neurorehabilitation <br> *Ichiro Miyai* | |
| **11:40 – 12:05** (G2) <br> What should we really be doing? Lessons from 15 years of chronic stroke rehabilitation research <br> *Jill Whitall* | **11:50 – 12:35** (G3) <br> Podium session 5 <br> Upper limb rehabilitation |
| **12:05 – 12:30** (G2) <br> Strategies for neuromuscular recovery after spinal cord injury <br> *Susan Harkema* | |
| **12:30 – 14:00** <br> Lunch/poster/exhibition | |
| **14:00 – 14:25** (G2) <br> Acceptance of impairment based rehabilitation robotics in the clinic and at home, what is required? <br> *Jules Dewald* | **14:00 – 14:45** (G3) <br> Improving impaired balance function for posture and gait: on-line versus carry-over effects of prosthetic feedback <br> *John Allum* |
| **14:25 – 14:50** (G2) <br> Clinical use of Rehabilitation Robotics: Getting to best practices <br> *Michael Boninger* | |
| **14:50 – 15:15** (G2) <br> Translating upper limb rehabilitation technologies into clinical practice: what are the critical determinants? <br> *Jane Burridge* | **14:45 – 16:00** (G3) <br> Podium session 6 <br> Gait, locomotion, navigation |

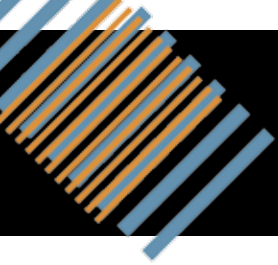| | |
|---|---|
| **15:15 – 15:35** (G2)<br>Physiological basis of an effective training after a stroke or spinal cord injury<br>*Volker Dietz* | |
| **15:35 – 16:30**<br>Coffee break/poster/exhibition | **16:00 – 16:30**<br>Coffee break/poster/exhibition |
| **16:30 – 16:35** (G2)<br>Evidence versus experience – Introduction<br>*Andreas Luft* | **16:30 – 17:30** (G3)<br>Podium session 7<br>Rehabilitation for brain injuries |
| **16:35 – 16:50** (G2)<br>The evidence so far and what should we do next<br>*Daniel Hanley* | |
| **16:50 – 17:00** (G2)<br>Clinical trial methodology<br>*Michael Weller* | |
| **17:00 – 17:20** (G2)<br>Practical Considerations in Formulating Stroke Rehabilitation Clinical Trials<br>*Steve Wolf* | |
| **17:20 – 18:00** (G2)<br>Roundtable discussion: Evidence versus experience | **17:30 – 18:30** (G3)<br>ISVR members meeting |

## Wednesday - June 29, 2011

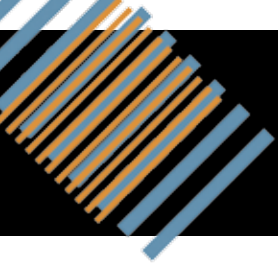| INRS | ICVR | ICORR |
|------|------|-------|
| **07:30 – 08:00**<br>Welcome coffee and registration | | |
| **08:00 – 08:20** (G1, G2)<br>Welcome address | | |
| **08:20 – 09:00 Keynote lecture** (G1, G2)<br>Cognitive Neuro-Prosthetics: From virtual limbs and avatars to robotic chairs<br>*Olaf Blanke* | | |
| **09:00 – 09:40 Keynote lecture** (G1, G2)<br>Rehabilitation robotics – closing the gap between expectation and current clinical performance<br>*Zev Rymer* | | |
| **09:40 – 10:20** (G1, G2)<br>Interactive podium presentation, fast forward (45s each) | | |
| **10:20 – 10:50**<br>Coffee break/poster/exhibition | **10:20 – 10:50**<br>Coffee break/poster/exhibition | **10:20 – 11:15**<br>Poster session 1/exhibition/coffee break |
| **10:50 – 11:15** (G2)<br>Robot-assisted neurorehabilitation for children: some non-evidence based considerations<br>*Andreas Meyer-Heim* | **10:50 – 12:35** (G3)<br>Podium session 8<br>VR training for pain and disability | |
| **11:15 – 11:40** (G2)<br>Robotic locomotor training: More than going through the motions<br>*Carolynn Patten* | | **11:15 – 12:30** (G1)<br>Podium session 1<br>5 x 15 min (12 + 3 min)<br><br>Orthotics and prosthetics |
| **11:40 – 12:05** (G2)<br>Clinical evidence for upper-extremity rehabilitation in chronic stroke and implications for use of robotic technology: results of VA ROBOTIC clinical trial<br>*Albert Lo* | | |
| **12:05 – 12:30** (G2)<br>Measuring and augmenting Locomotor recovery after SCI with spinal cord stimulation<br>*Keith Tansey* | | |
| **12:30 – 14:00**<br>Lunch/poster/exhibition | | |

**14:00 – 14:40 Keynote lecture** (G1, G2)

The future of neurorehabilitaiton: best practice is theoretically inspired, grounded in science and patient-centered
*Carolee Winstein*

**14:40 – 15:20 Keynote lecture** (G1, G2)

TUM Agetech: A framework for pervasive medical devices for elderly
*Tim Lüth*

**15:20 – 16:00** (G1, G2)

Interactive podium presentation, fast forward (45s each)

| | | |
|---|---|---|
| **16:00 – 16:30**<br>Coffee break/poster/exhibition | | **16:00 – 17:00**<br>Poster session 2/exhibition/coffee break |
| **16:30 – 16:50** (G2)<br>The impact of robotic technologies in neurorehabilitation and for assistive devices: lesson learnt and perspectives<br>*Franco Molteni* | **16:30 – 17:30** (G3)<br>Podium session 9<br>Rehabilitation for children | |
| **16:50 – 17:10** (G2)<br>Biomimetic upper limb NMES integrated with eye tracking in hybrid assistive exoskeletons<br>*Giancarlo Ferrigno* | | **17:00 – 18:00** (G1)<br>Podium session 2<br>4 x 15 min (12 + 3 min)<br><br>Neuroprosthetics & Brain Machine Interfaces |
| **17:10 – 17:30** (G2)<br>EMG-controlled functional electrical stimulation: devices and methods<br>*Thomas Schauer* | | |
| **17:30 – 17:50** (G2)<br>Robotic technologies for multiple sclerosis<br>*Vittorio Sanguinetti* | **17:30 – 18:00** (G3)<br>Awards and farewell | |

**17:50 - 18:10**

Transfer to gala dinner location at the venue Lake Side Zurich (www.lake-side.ch).
Several buses at different times will be organized.

## Thursday - June 30, 2011

### ICORR

**08:30 – 09:00**
Welcome coffee

**09:00 – 09:40 Keynote lecture** (G1)
Neuromuscular model of human walking: implication on prosthetic leg design
*Hugh Herr*

**09:40 – 10:20** (G1)
Fast-forward session (45s each)

**10:20 – 11:15**
Poster session 3 and exhibition/coffee break

**11:15 – 12:30** (G1)
Podium session 3
5 x 15 min (12 + 3 min)

Evaluation & clinical experience

**12:30 – 13:45**
Lunch

**13:45 – 14:30** (G1)
User involvement session

The loss of independence is a major point of concern after disease or accident. Five people, who experienced physical constraints as a result of accidents, stroke, or blindness, will talk about the challenges they face in daily life. They will share with us their experiences with robotics as therapeutic tools and daily life aids, how these robotics facilitate their independence, and which technical changes could further improve their activities and participation in daily life.

**14:30 – 15:30** (G1)
Podium session 4
4 x 15 min (12 + 3 min)

Upper limb robotics

**15:30 – 16:00** (G1)
Fast-forward session (45s each)

**16:00 – 17:00**
Poster session 4 and exhibition/coffee break

**17:00 – 18:00** (G1)
Podium session 5
4 x 15 min (12 + 3 min)

Orthotics

**18:00**
Welcome reception and lab visits at ETH Dome

## Friday - July 1, 2011

### ICORR

**07:30 – 09:00**
Welcome coffee

**07:45 – 08:50** (G1)
ICORR society kick-off
*J. Patton, R. Loureiro, W. Harwin*

**09:00 – 09:40 Keynote lecture** (G1)
Robotic and neuroprosthetic systems for neurorehabilitation after spinal cord injury
*Grégoire Courtine*

**09:40 – 10:20** (G1)
Fast-forward session (45s each)

**10:20 – 11:15**
Poster session 5 and exhibition/coffee break

**11:15 – 12:15** (G1)
Podium session 6
4 x 15 min (12 + 3 min)

Neuroscience robotics

**12:30 – 13:45** (G1)
Awards & closing ceremony
Lunch/exhibition

### ICORR workshops

| | | | |
|---|---|---|---|
| **13:45 – 15:45** (G1) Implementation of impairment based rehabilitation robotics *J. P. A. Dewald* | **13:45 – 15:45** (G2) Detecting motor intention in rehabilitation *K. Ito, K. Nagai* | **13:45 – 18:15** (G5) Clinical insights for rehabilitation engineers *J. Burridge, A.-M. Hughes, P. Feys, A. Timmermans, G. Prange, J. Buurke* | **13:45 – 18:15** (G4) Physiological principles of loco-motion required for robot design *V. Dietz, A. König, H. Vallery, R. Ronsse* |
| **15:45 – 16:15** Coffee break | | | |
| **16:15 – 18:15** (G1) Motor skill learning and neuro-rehabilitation *V. Sanguineti, E. Burdet* | **16:15 – 18:15** (G2) Brain-computer interfaces for communication and control *M. Zeintlinger* | | |

# Workshops

## INRS Workshops

| Robotics in the rehabilitation of upper limb function in SCI | Monday 09:30 - 12:00 |
|---|---|
| Armin Curt, MD, Spinal Cord Injury Center, Balgrist University Hospital, University of Zurich, Switzerland<br>Inge-Marie Velstra, MSc, Swiss Paraplegics Centre, Nottwil, Switzerland<br>Milos Popovic, PhD, Rehabilitation Engineering Laboratory, Toronto, Canada<br>Annick Timmermans, PhD;,Maastricht University, Netherland<br>Michael L. Boninger, MD, University of Pittsburgh school of Medicine, Pittsburgh, USA<br>José Zariffa, MSc, ICORD, University of British Columbia, Canada<br>Doris Maier, MD; Trauma Center Murnau, Germany<br>Deborah Backus, PhD, Spinal Cord Injury Research, Sheperd, Atlanta, USA<br>John Steeves, PhD, ICORD, University of British Columbia, Canada | G1 |
| Organizer: A. Curt, MD, Spinal Cord Injury Center, Balgrist University Hospital, University of Zurich, Switzerland | |

*Objective*
The field of rehabilitation robotics has seen increasing interest over the last decades. Robotic devices are a promising solution to complement conventional therapy, and provide a unique platform for more objective and sensitive assessment. This workshop focuses on robotics in upper limb rehabilitation.

**Workshop Program**
- 09:30 - 09:40
  Welcome (Armin Curt)
- 09:40 - 09:55
  The advanced assessment of upper limb function (Inge-Marie Velstra)
- 09:55 - 10:15
  Advanced approaches in upper limb rehab (Milos Popovic)
- 10:15 - 10:30
  Task-oriented training of the upper extremity in SCI: Concepts and methods for rehabilitation technologies
  (Annick Timmermans, Annemie Spooren)
- 10:30 - 10:50
  How to identify targets and tools in upper limb SCI rehab (Michael L. Boninger)
- 10:50 - 11:05
  First insights into the Armeo application in tetraplegia (José Zariffa)
- 11:05 - 11:25
  Clinical standards: European perspective (Doris Maier)
- 11:25 - 11:45
  Clinical standards: North America perspective (Deborah Backus)
- 11:45 - 12:00
  Wrap up and lessons learned (John Steeves)

| Very early rehabilitation | Monday 09:30 - 11:30 |
|---|---|
| Andreas Luft, UniversitätsSpital Zurich, Zurich, Switzerland<br><br>Joachim Liepert, Kliniken Schmieder Allensbach , Germany<br><br>Lyudmila Chernikova, RAMS, Russia<br><br>Margret Hund, Wald, Switzerland<br><br>Dr. Friedemann Müller, Bad Aibling, Germany<br><br>Dr. Karin Diserens, CHUV, Switzerland | G2 |
| Organizer: Andreas Luft, Universitätsspital Zurich, Zurich, Switzerland | |

*Objective*

The aim of this workshop is to provide an overview on standards and guidelines for very early mobilization in different pathologies like Stroke, TBI and SCI and to discuss recent and future developments within the field. Furthermore to provide an insight on how new technologies are currently integrated and applied into the clinical setting and their future potential.

- 09:30 - 09:50
  Background: Very early rehab, how early is early, main problems and future prospective (Andreas Luft)
- 09:50 - 10:10
  Early rehabilitation: What is proven, what is new (Joachim Liepert)
- 10:10 - 10:30
  Efficacy of very early mobilization in stroke, potential of new technologies (Lyudmilla Chernikova)
- 10:30 - 10:50
  An example of early rehab in post intensive care (Margret Hund)
- 10:50 - 11:10
  The German classification system for early rehab and its clinical implications (Friedemann Müller)
- 11:10 - 11:30
  Ischemic stroke management in the intensive care setting (Karin Diserens)

| Implementation of robotics in clinical settings – best practice examples | Monday 09:30 - 10:30 |
|---|---|
| Dr CHAN Kay Fei, Tan Tock Seng, Singapore<br>Dr. Kerstin Baldauf, Helios Klinik, Switzerland Leslie VanHiel, BME, MSPT, Shepherd Center, USA | G4 |
| Organizer: Hocoma, Switzerland | |

*Objective*

In this workshop speakers from leading rehabiliation centers from over the world will present their experience with the implementation of robotics into their clinical settings.

The speakers will introduce their centers and robotic devices with their target patients treated with robotics. Furthermore they will present the new working environment of their therapists, talk about their experience with reimbursement, and report from problems they were confronted with when they started with robotics and how they solved them.
There will be three talks a 15 minutes.

During the last 15 minutes of this workshop, all speakers are available for answering your questions.

| Non invasive spinal assessment | Monday 09:30 - 10:30 |
|---|---|
| Cesare Mannhart (MSc ETH HMS) | G3 |
| Organizer: idiag, Switzerland | |

*Objective*

This workshop will provide an overwiew on different non invasive spinal assessment methods with an emphasis on the SpinalMouse®.

The SpinalMouse® is an assessment device to determine shape and mobility of the spinal column (Th1 - S3) in the sagittal and frontal planes in a non invasive way. The device is rolled over the skin down the back as the mobile sensors independently follow the shapes and angles of the vertebrae. Based upon a scientifically valid and reliable computing method, the following clinically relevant parameters are computed:

• Mobility and posture of individual motion segments, anatomical regions and the overall spine in the sagittal and frontal planes
• Postural competence and sufficiency
• Sacral-hip joint positioning
• Length of the back

Understanding the position and mobility of vertebral segments helps to identify back specific findings, to define an individually tailored therapy and eventually to evaluate and report on the therapeutic progess. The participants will have the opportunity to use the SpinalMouse®.
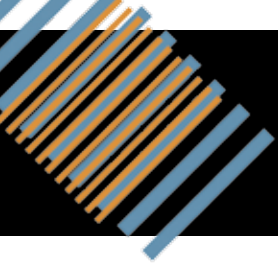
| Early mobilization: current standards enhanced using Erigo® advanced robotic movement therapy | Monday 11:30 - 12:30 |
|---|---|
| Harald Kinzner<br>Arash Dodge, PhD | G2 |
| Organizer: Hocoma, Switzerland | |

*Objective*

In recent years early mobilization of patients in acute care has proven to be an effective therapy for stroke and intensive care patients. For example helping stroke patients moving and loading their legs when in the upright position as early as 24h after onset has proven to be a safe procedure where patients can faster regain the ability to walk in a significant way. However this type of treatment requires 2-3 physiotherapists and is difficult to sustain for longer periods of training. The purpose of Erigo® therapy is to use an advanced robotic device to support this type of treatment by combining verticalization, mobilization of the hip, knee and ankle joints in a physiological manner, and cyclic loading of the legs in order to support therapists when performing early mobilization of moderate to severely affected patients as early as possible. The Erigo has proven to be an effective therapy for bringing patients faster in the upright position by keeping patients' cardiovascular system stable during verticalization.

In this workshop we will
• Give a brief overview of early mobilization standards in the scientific and clinical community today
• Demonstrate the Erigo product with an overview of its features and benefits
• Present Erigo therapy implementation in different acute care clinical settings such as a neurointensive ward for spinal chord injured patients, and in a stroke unit
• Discuss scientific results using Erigo in acute and post acute care for neurological patients

This workshop is targeted to physiotherapists and physicians working in acute care settings such as stroke units, intensive care units, or rehabilitation facilities where early rehabilitation is a mindset. We will help you take your early rehabilitation therapy concepts to the next level!

| Enhanced functional locomotion therapy with the Lokomat® | Monday 11:00 - 12:00 |
|---|---|
| Annick Schmartz, MSc<br>Julia Buehlmeier, PhD | G4 |
| Organizer: Hocoma, Switzerland | |

*Objective*

Locomotion therapy supported by an automated gait orthosis on a treadmill has shown to be an effective intervention for improving over-ground walking function caused by neurological diseases and injuries in many cases. The Lokomat® system assists walking movements of gait-impaired patients and is used to improve mobility in individuals following stroke, spinal cord injury, cerebral palsy and multiple sclerosis as well as other neurological diseases and injuries. The LokomatPro has been on the market since 2001 and has been a crucial improvement in the art and science of locomotion therapy.

In this workshop, we will
• perform a product demonstration
• explain the advantages of Lokomat therapy compared to conventional gait training, such as longer and more intensive training, real time feedback for a higher motivation and compliance, physiological gait pattern provided by individually adjustable orthoses, assessment and reporting functionality
• present the field of application of the Lokomat
• give insight into current scientific evidence

Clinical application specialists will be present to discuss and answer your questions.
This workshop targets therapists as well as medical doctors interested in bringing gait therapy to the next level using novel technologies, and it will provide an overview over the clinical benefits and the field of application of the Lokomat.
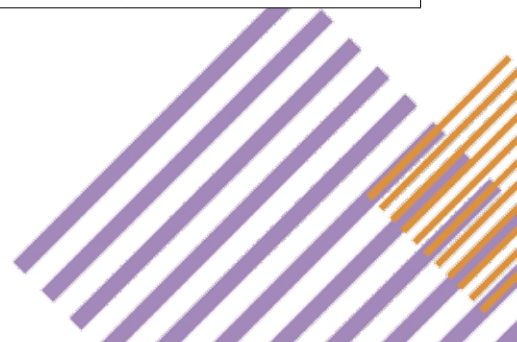
No experience with the device necessary.

| Virtual reality-based rehabilitation with YouGrabber and YouKicker | Monday 11:00 - 12:00 |
|---|---|
| PD Dr. Daniel Kiper, Co-Founder, YouRehab AG<br>Oliver Ullmann, Co-Founder & CEO, YouRehab AG | G3 |
| Organizer: YouRehab, Switzerland | |

*Objective*
YouGrabber is a new virtual reality-based tool for upper limb rehabilitation. It is unique in its ability to measure bimanual reaching and grasping in 18 degrees of freedom, combined with class-leading gaming software. Using YouGrabber, therapists can implement several therapy forms with one system, e.g. functional training, constraint-induced therapy, virtual mirror therapy. This workshop will demonstrate the clinical use of YouGrabber and its companion YouKicker for lower-limb rehabilitation.

| Robot-supported locomotor training in pediatric neurorehabilitation: application, assessment and achievements | Monday 13:00 - 15:15 |
|---|---|
| Huub van Hedel, PhD, PT<br>Karin Brütsch, PhD,<br>Corinne Ammann, MPTSc<br>Tabea Schuler MSc | G1 |
| Organizer: Huub van Hedel, Childrens Hospital, University of Zurich, Affoltern, Switzerland | |

*Objective*

The goal of this workshop is to provide an insight into our approach at the Rehabilitation Center Affoltern am Albis to train children with neurological disorders with the pediatric driven gait orthosis Lokomat. In addition, we present the tests we use to evaluate changes in walking ability and we will present an up-to-date overview about the scientific achievements in this field.

The target audience we aim for are therapists who are working in a pediatric setting and (are interested in working) with the pediatric Lokomat

Your hosts for this workshop are Corinne Amman, physiotherapist, Karin Brütsch, psychologist, Tabea Schuler, movement scientist and Huub van Hedel, physiotherapist and movement scientist.

This workshop will consist of several presentations, as well as some practical exercises.

The programm looks as follows:
- Introduction to our center and expectations of the workshop participants
- Robotic Body Weight Supported Treadmill Training (BWSTT) in children from a practical point of view: Target population, inclusion/exclusion criteria, adjusting training parameters
- Biofeedback and virtual reality for robotic BWSTT in children
- Clinical results of robotic BWSTT in children
- Standardized Assessments: Timed walking tests and feasibility of the electronic walkway system "GaitRite"
- 3D Gait Analysis to monitor improvement in quality of walking – A clinical example
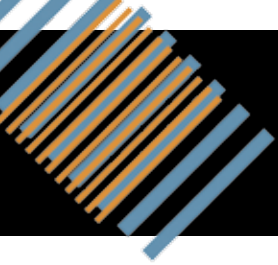
| Introducing the Armeo®Power: Guiding severely affected patients towards clinical success | Monday 13:00 - 14:00 |
|---|---|
| Nicole Schüpfer, MSc<br>Alexander Duschau-Wicke, PhD | G2 |
| Organizer: Hocoma, Switzerland | |

*Objective*

In this workshop, we will present the Armeo®Power to an international public for the first time. The ArmeoPower completes Hocoma's established Armeo Therapy Concept and was specifically designed for patients with severe movement impairment who have no voluntary activation of their arm muscles yet. In addition to the Arm Weight Support, those severely affected patients specifically require assist-as-needed support for goal-directed movements. The motors of the ArmeoPower arm exoskeleton fulfill these needs by supporting and guiding patients as needed during the training of functional movements in a large 3D workspace.

Get to know the ArmeoPower in a hands-on seminar, and learn about experiences and best practices with the ArmeoPower research prototype (ARMin III, ETH Zurich) during a stroke multicenter trial in 4 Swiss rehabilitation hospitals

No experience with the device necessary.

| Lokomat® advanced: Provoking best therapy efficiency in every therapy period | Monday 13:00 - 14:00 |
|---|---|
| Candy Tefertiller, Director of Physical Therapy <br> Julia Buehlmeier, PhD | G4 |
| Organizer: Hocoma, Switzerland | |

*Objective*

This workshop targets therapists as well as medical doctors who are already familiar with the basics of the Lokomat.
In this workshop, we will provide best practice examples with the Lokomat.

Furthermore we will focus on the following:
• how to challenge the patients with their specific needs during the course of the disease
• how to adapt and modulate training parameters in order to provoke best possible outcomes

Experience with device essential.

| Pablo®Plus - upper limb rehabilitation | Monday 13:00 - 14:00 |
|---|---|
| Msc. Maik Hartwig, OT | G3 |
| Organizer: Tyromotion, Austria | |

*Objective*

Introducing the evidence-based therapy system Pablo®Plus for patients with sub-acute and chronic arm-paresis with plegic, paretic and spastic handicaps.

The practice oriented workshop shows a great variety of training methods with both the Pablo®Multiball and Pablo®Multiboard, which not only allow to train upper limb movements, strength and tonus-control but also record each and every assessment for documentation and evaluation.

| Enhancing arm and hand rehabilitation with Armeo®Spring | Monday 14:15 - 15:15 |
|---|---|
| Tom Vanderhenst, MSc <br> Peter Schenk, PhD | G2 |
| Organizer: Hocoma, Switzerland | |

*Objective*

Since its introduction in 2007, the Armeo®Spring has gained a lot of attention and has been introduced successfully into leading centres worldwide. Through the combination of the passive Arm Weight Support and Augmented Feedback, it facilitates intensive, repetitive, self-initiated movement exercises even for patients with severe motor impairments. The Augmented Feedback provides game-like exercises and functional tasks, but also Assessment Tools.
In this workshop, we will

• introduce the rationale for the ArmeoSpring therapy,
• present the Armeo Therapy Concept,
• present current scientific evidence,
• perform a live demonstration.

Clinical application specialists will be present to discuss and answer your questions.

This workshop targets therapists as well as medical doctors interested in bringing upper extremity therapy to the next level using novel technologies, and it will provide an overview over the clinical benefits and the field of application of the ArmeoSpring.

No experience with the device necessary.

| Valedo™ Therapy Concept - Low back pain treatment with motivating functional movement therapy | Monday 14:15 - 15:15 |
|---|---|
| Jan Kool, PhD<br>Eelco Sengers, PT | G4 |
| Organizer: Hocoma, Switzerland | |

*Objective*

Chronic low back pain is a major and occupational public health problem, which is associated with high medical costs mainly through the loss of productivity due to sick leave. Research suggests that many back injuries and incidences of low back pain can be improved by active functional movement therapy. Nevertheless, the main problems in low back pain therapy are insufficient patient motivation as well as the patient's difficulty to exercise independently.

The ValedoMotion is a medical back training device for professional hospital and clinical use. It consists of three lightweight orientation and motion sensors and a tablet PC providing the Augmented Feedback software as well as audio and visual feedback. Therapeutic exercises mainly focuses on three areas: Stabilization, Mobilization and Movement awareness.
With the ValedoMotion we offer clinical relevant exercises to patients, engaging them in a self guided therapy program and improve the therapy and assessment for compliances.

Within the workshop we will give you an overview of the features and benefits of the Valedo Therapy Concept. The difference the ValedoMotion makes in daily practice with patients will be addressed by Eelco Sengers of the Sophia Rehabilitation Centre, The Hague, Netherlands

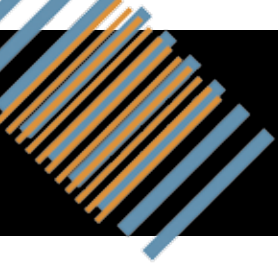There will be the opportunity to experience the ValedoMotion yourself.


| Amadeo® - Advanced fingerrehabilitation | Monday 14:15 - 15:15 |
|---|---|
| Goncalo Goncalves, PT | G3 |
| Organizer: Tyromotion, Austria | |

*Objective*
There are just as many different hands as there are people. The Amadeo® creates a system for all phases of neurologic rehabilitation.

Target oriented exercises on the device help to improve motor functions of patients with restricted movement in individual fingers or in the whole hand.

The varied training and the clear feedback evaluations are very motivating for the patient. The therapy progress is made measurable and can be explained easily when discussing the effect of the therapy.

**ICVR Workshops**

| Virtual Reality Technology for the Therapist | Monday 08:30 - 12:00 |
|---|---|
| Grigore C. Burdea, Rutgers University Tele-Rehabilitation Institute | HCI, J3 |
| Organizer: Grigoire C. Burdea, Rutgers University | |

*Objective*
The tutorial aims at educating the clinician on current VR technology intended or adapted for clinical use, including advantages and draw-backs.

Virtual reality technology has progressed substantially in recent years, with system costs diminishing. Adoption has been mixed, and sometimes without a strong body of research, which certainly poses safety risks for the patient and professional challenges for the clinician. While building a strong body of data that would lead to "best practices" will take time, this Tutorial can assist by giving a broad and unbiased coverage of the technology and predicting trends for the future.

*Intended Audience*
Clinicians (PTs, OTs, neuro-psychologists, psychiatrists) who contemplate getting involved in virtual rehabilitation research or clinical adoption but are held back by the technology unknown.

| Virtual Reality for Arm Therapy | Monday 09:30 - 12:00 |
|---|---|
| Andreas Luft,University Hospital Zurich | HCI, J4 |
| John Krakauer, Johns Hopkins Hospital | |
| Karmen Franinovic, ZHdK, | |
| Eugene Tunik, University of Medicine & Dentistry of New Jersey | |
| Eling de Bruin, ETH Zurich | |
| Robert Riener, ETH Zurich | |
| Organizer: Andreas Luft, University Hospital Zurich | |

*Objective*
Behavioral results in healthy volunteers suggest that virtual reality video gaming not only trains reaction time, selective attention and vision, but also improves one's implicit learning ability. Stroke survivors can likely utilize the implicit learning capabilities of the motor system to improve movement deficits. The purpose of this workshop is to explore how to translate virtual reality-based training models that improve healthy learning to rehabilitation. The first two lectures are devoted to the characteristics of healthy movement learning and VR augmentation of healthy learning. The last two lectures then present virtual reality approaches to rehabilitation of elderly individuals and stroke survivors. The workshop will conclude with a round table discussion that aims at defining the necessary characteristics of virtual reality robotic gaming for stroke survivors with motor deficits.

- Why we need VR in rehabilitation, lessons from motor learning studies (15+5 min)
  *John Krakauer, Johns Hopkins Hospital*
- Learning from VR games (30+10 min)
  *Daphne Bevalier, University of Rochester*
- VR in rehabilitation (20+5 min)
  *Eling de Bruin, ETH Zurich*
- VR and robotics (20+5 min)
  *Robert Riener, ETH Zurich*
- Round Table Discussion: Developing VR games for stroke survivors with motor deficits (30 min)
  *All*

| Microsoft Kinect/Primesense Sensing Systems for Virtual Rehabilitation | Monday 08:30 - 12:00 |
|---|---|
| Belinda Lange and Albert (Skip) Rizzo, University of Southern California<br>Patrice (Tamar) Weiss, University of Haifa | HCI, J6 |
| Organizers: Belinda Lange and Albert (Skip) Rizzo, University of Southern California | |

*Objective*

One of the exciting new developments in the field of Virtual Rehabilitation involves the release of the new Xbox Kinect system by Microsoft. This revolutionary game platform uses an infrared "depth-sensing" camera (produced by an Israeli company, Primesense) to capture users' full body movement in 3D space for interaction within game activities. This system does not require the user to hold an interface device or move on a pad as the source of interaction within the game. Instead, the user's body is the game controller operating in 3D space and multiple users can be tracked in this fashion for both cooperative and competitive interactive activities. This technology is a significant advance over previously available 2D video capture systems.

Such low cost sensing systems for tracking human movement could revolutionize how virtual rehabilitation will be done in the future. Following a stroke, brain injury or other form of neurological disorder, a patient using this system can naturally interact with game content as part of their physical, occupational and cognitive therapy and they may be more motivated to do therapy when it is embedded in a game context. An attractive feature is the fact that while the Primesense camera provides the tracking functionality for the Kinect, it will soon be available as a low-cost stand-alone USB depth-sensing camera. This option will allow homegrown developers and researchers to produce game software and content that is specifically designed to promote rehabilitation, and perhaps "exergaming" activities beyond what the Xbox console games may offer.

Researchers have thus far integrated the MS Kinect/Primesense movement tracking system with custom-built rehab games and with associated software that allows it to drive any PC-based computer game by emulating standard mouse and keyboard commands, all based on the designated physical activity of the user. This will provide a new dimension for interactive rehabilitation and exergaming in many ways by opening up a multitude of existing game content for full body interaction. These advances could stand to promote healthcare research and application development that could be widely disseminated at a low cost in user's homes.

The objective of this workshop is to provide participants with an introduction to the technology and illustrate how it has thus far been applied in application development and evaluation. Participants will have an opportunity to try out the system and take part in a discussion regarding future research and clinical developments.

**ICORR Workshops**

| Implementation of impairment based rehabilitation robotics | Friday 13:45 - 15:45 |
|---|---|
| Jules Dewald, Northwestern University, Chicago<br>Jacob MacPherson, Northwestern University, Chicago<br>Arno Stienen, University of Twente, The Netherlands<br>Ana Maria Acosta, Northwestern University, Chicago | G1 |
| Organizers:<br>Jules Dewald, Northwestern University, Chicago, USA<br>Ana Maria Acosta, Northwestern University, Chicago, USA | |

*Objective*
This workshop will demonstrate the ideal attributes of various robotic technologies necessary for the quantification of motor impairments, such as stereotypical muscle synergies, spasticity and paralysis, that appear following stroke-induced brain injury. Deeper understanding of how these impairments impact movement will be shown to lead to the successful development of novel robot-mediated interventions. The discussion will include how impairment-based robotic interventions differ from conventional rehabilitation not only in quantitative control and level of intensity, but in the fundamental approach or strategy employed to achieve functional gains. Furthermore, considerations for successful transition to clinical practice will be highlighted including methods to increase acceptance by the therapist and patient such as merging entertainment with impairment-based rehabilitation robotics through the implementation of virtual gaming environments.

| Motor Intention and Sensory Feedbacks in Rehabilitation | Friday 13:45 - 15:45 |
|---|---|
| Koji Ito, Ritsumeikan University<br>Rieko Osu, ATR<br>Yasuharu Koike, Tokyo Institute of Technology<br>Etienne Burdet, Imperial College London<br>Pietro G. Morasso, Italian Institute of Technology | G2 |
| Organizers:<br>Koji Ito, Research Organization of Science and Engineering, Ritsumeikan University, Japan<br>Kiyoshi Nagai, Department of Robotics, College of Science and Engineering, Ritsumeikan University, Japan | |

*Objective*
Functional injuries in motor control are induced by various causes, such as stroke, traffic accidents, etc. Especially, stroke is a leading cause of adult disability. Though many rehabilitation methods are proposed for motor recovery, motor learning underlying the acquisition of motor skills is considered as a basic principle for functional recovery. It is then known that proprioceptive feedbacks to the somatosensory area reinforce the motor control in the damaged area and its surroundings. Specifically, synchronous activation of neurons along the motor and sensory pathways is essential to facilitate the synaptic reconnection.

The objectives of this workshop are to discuss the following topics related to motor intention and sensory feedbacks in rehabilitation.
• Novel methods detecting motor intention by EEG, EMG, NIRS etc.
• Proprioceptive sensory feedbacks by FES (Functional Electrical Stimulation), haptic interfaces of robots, and variable compliance/impedance robotic devices.

*Intended Audience*
The workshop is open to all the delegates.

| Clinical insights for rehabilitation engineers | Friday 13:45 - 18:15 |
|---|---|
| Jane Burridge, University of Southampton (UK) | G5 |
| Peter Feys, Hasselt University & PHL (BE) | |
| Annick Timmermans, Adelante Centre of Expertise in Rehabilitation (NL) | |
| Gerdienke Prange, Roessingh Research & Development Research Institute (NL) | |
| Ann-Marie Hughes, University of Southampton (UK) | |
| Organizers: | |
| Jane Burridge & Ann-Marie Hughes, University of Southampton, UK | |
| Peter Feys, Hasselt University & PHL, Belgium | |
| Annick Timmermans, Adelante Centre of Expertise in Rehabilitation, The Netherlands | |
| Gerdienke Prange, Roessingh Research & Development Research Institute, The Netherlands | |

*Objective*
This workshop aims to bridge the gap between robot designers and robot users. It addresses the question 'how do we design robots that will be used in clinical practice for different types of impairments?' Robotic devices are increasingly sophisticated and have many applications in supporting neuro-rehabilitation. Recent evidence from neurophysiological research and clinical studies has influenced rehabilitation robotic interventions for the arm, providing valuable knowledge about how to apply technology-based therapy for people with neurological disorders, such as stroke and multiple sclerosis. However, clinical use of such devices remains limited. Should the robots have to be re-designed?

The workshop will provide a comprehensive view from neurophysiology to users' needs and expectations. It will involve the audience in a lively debate stimulated by video presentations of patient case studies.

*Intended Audience*
The intended audience is primarily designers, engineers, and developers of arm rehabilitation technologies for neurological patients. The session will also be of interest to therapists, researchers, medical practitioners, neurophysiologists etc. involved in the application of rehabilitation robotics in clinical practice, as well as to any people interested in this field of study from a professional or personal background.
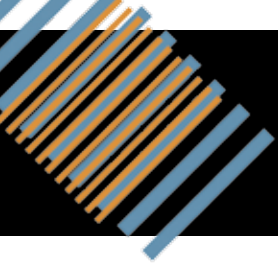
| Physiological Principles of Locomotion required for Robot Design | Friday 13:45 - 18:15 |
|---|---|
| Volker Dietz, University of Zurich<br>Gregoire Courtine, University of Zurich<br>Alexander König, ETH Zurich<br>Rüdiger Rupp, Universitätsklinik Heidelberg<br>Hartmut Geyer, Carnegie Mellon University<br>Erin Vasudevan, Moss Rehabilitation Research Institute<br>Jacques Duysens, KULeuven<br>Renaud Ronsse, UCLouvain<br>Jonas Buchli, Italian Institute of Technology | G4 |
| Organizers:<br>Volker Dietz, University of Zurich, Switzerland<br>Alexander König, ETH Zurich, Switzerland<br>Heike Vallery, ETH Zurich, Switzerland<br>Renaud Ronsse, UCLouvain, Belgium | |

*Objective*
This workshop aims at transferring physiological knowledge on the principles underlying neuro-plasticity after CNS damage in animals and humans to the efficient design of rehabilitation robotics and prosthetics. We will describe experiments in which neuroscientific knowledge has already been transferred into pre-clinical and clinical robots, and will provide neuroscience-based guidelines to design novel gait rehabilitation robots and prostheses. Collectively, the presented results will define a conceptual and practical framework to elaborate novel robotic systems that have the potential to further enhance the efficacy of robotically assisted neuro-rehabilitation to improve function after neurological impairments. A point of discussion will be the combination of the advantages from both sensory feedback and feed-forward controllers in rehabilitation robotics and prosthetics designs, as established by control theory principles.
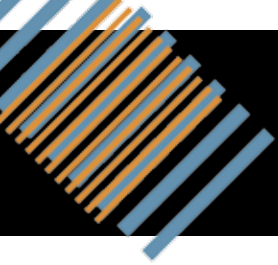
| Brain-Computer Interfaces for communication and control | Friday 16:15 - 18:15 |
|---|---|
| Rupert Ortner, g.tec Guger Technologies<br>Nathan Evans, Laboratory of Cognitive Neuroscience, École Polytechnique Fédérale de Lausanne<br>Robert Leeb, Chair in Non-Invasive Brain-Machine Interface, École Polytechnique Fédérale de Lausanne | G2 |
| Organizer: Rupert Ortner, g.tec Guger Technologies, Austria | |

*Objective*
An EEG based Brain-Computer Interface (BCI) measures and analyzes the electrical brain activity (electroencephalogram, EEG) in order to convert the EEG into control commands. These commands are used to control external devices like wheelchairs or robots, spelling applications or smart environment like smart homes. BCIs are based - depending on the type of application - on slow cortical potentials, EEG oscillations in the alpha and beta band, the P300 response or steady-state visual evoked potentials (SSVEP). For example, BCI systems based on slow cortical potentials or oscillatory EEG components with 1-5 degrees of freedom were realized up to now. However, high information transfer rates were reached based on 2 degrees of freedom as otherwise the accuracy of the BCI systems dropped down. SSVEP based systems allow selecting up to 48 different targets and are limited by the number of distinct frequency responses that can be analyzed in the EEG. With P300 response based BCIs users can select commands from a rather large command set reliably. Recent advances in usability and reliability of BCI systems made it possible to demonstrate its usefulness for persons with disabilities without significant training effort. In this session different approaches based on demonstrators shall be introduced and vividly discussed.

*Intended Audience*
People working in the area of brain-machine interface, neuro-rehabilitation, working with handicapped people, innovative human computer interaction.

| Motor skill learning and neuro-rehabilitation | Friday 16:15 - 18:15 |
|---|---|
| Vittorio Sanguineti, University of Genoa and Italian Institute of Technology (ITALY) <br> Herbert Heuer, IfADo - Leibniz Research Centre for Working Environment and Human Factors (GERMANY) <br> Etienne Burdet, Imperial College, London (UNITED KINGDOM) <br> Roberto Colombo, Fondazione 'Salvatore Maugeri', Pavia (ITALY) <br> Dejan Popovic, Aalborg University, Aalborg (DENMARK) and University of Belgrade (SERBIA) <br> Ander Ramos, Eberhard-Karls-Universitat, Tübingen (GERMANY) | G1 |
| Organizers: <br> Vittorio Sanguineti, University of Genoa and Italian Institute of Technology, Italy <br> Etienne Burdet, Imperial College of Science, Technology and Medicine, UK | |

*Objective*
In recent years, motor learning theories and experiments have been used as a tool to investigate neurorehabilitation. In fact, neuro-rehabilitation can be analyzed as a particular form of motor skill learning.

Studying how humans acquire novel motor skills (and how robots can be used to facilitate such learning) may suggest or test neurorehabilitation therapies and novel ways to use robots for rehabilitation. For example, it has been suggested that the acquisition of a novel motor skill can be facilitated by allowing trainees to experiment the correct movements (the 'guidance' hypothesis), possibly using robots. However, guidance seems effective for some tasks but not for others. In addition, guidance may result in a reduced voluntary contribution, which may be detrimental to learning (the slacking effect).

And, after all, is guidance the only way robots could facilitate the acquisition of a motor skill? The effect of guidance and its opposite, lateral destabilisation, as well as other control strategies, have been experienced and analyzed by the speakers and other groups, and enabled to derive efficient strategies for neurorehabilitation.

The proposed workshop builds on the results of the EU-FP7 project HUMOUR, and has the following specific objectives:
• To provide an overview of the major theoretical issues in motor skill learning: guidance hypothesis, slacking, force field learning, role of redundancy
• To discuss how robots can facilitate the acquisition of a novel motor skill
• To discuss how robots could support the transfer of a motor skill from an expert to a naïve performer, and to support the acquisition of cooperative behaviors

The workshop will include tutorials, case studies and video demonstrations. The speakers are using robots and control theory, as well as psychophysical experiments, with healthy and impaired subjects, to investigate novel rehabilitation strategies.
At the end of the workshop, participants will be able to:
• Design an appropriate scheme of assistance for a specific motor task.
• Develop schemes for regulation of assistance, specifically aimed at preventing the slacking effect.
• Define appropriate performance measures for those particular tasks.

*Intended Audience*
Robot-therapy experts willing to identify novel and more principled approaches, based on knowledge of the mechanisms of motor skill learning.

# Social Events Rehab Week Zurich

### INRS 2011 Social Event hosted by Hocoma

Move from the networks in the brain to your networks of friends and col-
leagues at the INRS social event! The INRS 2011 social event will take place
at the famous "Bad Allenmoos" (one of Zurich's traditional outdoor swimming
facilities) on Monday, June 27th, after the INRS workshop program. We will
leave the closed congress rooms behind for a short hike through the greener
parts of Zurich and enjoy the evening at the outdoor facility. Food & drinks will
be served.



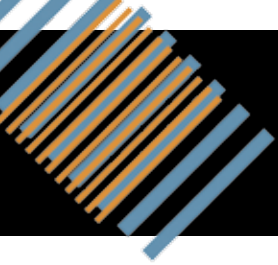| | |
|---|---|
| Address | Freibad Allenmoos<br>Ringstrasse 79<br>8057 Zürich |
| Date and time | Monday, June 27th, 2011 |
| Start hike | Meet at 3:45 p.m. at the registration desk in HPH D Hall. Afterwards, 1 hour hike through the forest with a beautiful view over Zurich to Bad Allenmoos. Please wear robust shoes (suited for uneven terrain, no high heels!) and comfortable clothing appropriate to weather conditions. |
| Start get-together | 5:00 p.m. at Bad Allenmoos. Please show your social event voucher at the entrance. |
| Swimming | Bring your swimming gear and a towel if you want to refresh yourself in the outdoor pool. We recom-mend appropriate clothing to spend most of the evening outside (it is possible to change your clothing at Bad Allenmoos). |

As an alternative to walking, individual transfer to Bad Allenmoos by public transportation. Some options are:

| | |
|---|---|
| Congress site | Bus 69 (direction "Milchbuck") from station "ETH Hönggerberg" to "Bucheggplatz" (e.g. 4:39 p.m. or 4:46 p.m., 10 minutes) then transfer to Tram 11 (direction "Auzelg") from "Bucheggplatz" to "Bad Allenmoos" (e.g. 4:50 p.m. or 4:57 p.m., 3 minutes). |
| Zurich main station | Tram 11 from "Bahnhofquai/HB" (direction "Auzelg") to "Bad Allenmoos" (e.g. 4:40 p.m. or 4:48 p.m., 12 minutes). |
| Way back<br>(Bad Allenmoos to<br>Zurich main station) | Tram 11 (direction „Rehalp") to „Bahnhofquai/HB" (every 15 minutes).<br><br>Selection of Zurich taxis:<br>Züritaxi:     +41 (0)44 222 22 22<br>Taxi 444:    +41 (0)44 444 44 44<br>Alpha Taxi:  +41 (0)44 777 77 77 |
| Emergency contact | Please contact our staff at the registration desk, HPH D Hall (entrance hall ETH science city) for further information or call +41 (0)78 688 40 08 in case of a delay. |

**ICVR 2011 Welcome Event**

The ICVR committee is pleased to invite you to the welcome event at the famous Zunfthaus zur Meisen. Built in the French baroque style in 1757, it represented the cultural blossoming of the city at the time. It is the home of the "Meisen" guild representing winemakers, saddlers and painters, which has existed since 1336. Over the years the house has hosted many prominent persons, including Queen Elizabeth II, King Gustav of Sweden, Jimmy Carter and Winston Churchill. Come and experience the unique ambiance of one of the most famous and historic buildings in Zurich, with fine finger food and drinks, in a relaxed and welcoming atmosphere
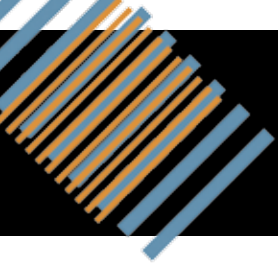
| | |
|---|---|
| Address | Zunfthaus zur Meisen, Münsterhof 20, 8001 Zurich<br>+41 (0)44 211 21 44<br>www.zunfthaus-zur-meisen.ch |
| Date and time | Monday, June 27, 2011<br>start at 6.30 p.m. |
| How to get there | Public transport:<br>Tram 2, 6, 7, 8, 9, 11 or 13 to "Paradeplatz",<br>or tram 4 or 15 to "Helmhaus".<br><br>Selection of Zurich taxis:<br>Züritaxi:  +41 (0)44 222 22 22<br>Taxi 444:  +41 (0)44 444 44 44<br>Alpha Taxi:  +41 (0)44 777 77 77 |

## Gala Dinner Restaurant Lake Side Zurich

The Organizing Committees are pleased to welcoming you in the beautifully located restaurant Lake Side Zurich. Due to its excellent food and its perfect location the restaurant is one of the most popular venues in town. The cocktail reception starts at 6:00 p.m. in the restaurant's summer lounge and is followed by a standing 3-course dinner on the upper floor of the venue. Throughout the evening the Swiss cover band Mr. Ray's Class will entertain you with background and dance music. The dinner is the ideal platform to meet up with other Rehab Week Zurich 2011 participants and industry partners from all over the world.



| | |
|---|---|
| Address | Lake Side, Bellerivestrasse 170, Zurich<br>www.lake-side.ch |
| Date and time | Wednesday, June 29, 2011 |
| Start cocktail reception | 6 p.m., Summer Lounge |
| Start 3-course<br>standing dinner | 7 p.m., 1st floor<br>Please show your dinner voucher at the registration desk located on the restaurant's ground floor. |



How to get there     Bus:
There are shuttle buses organized leaving the congress venue, ETH Science City, from 6 p.m. until 6.30 p.m.

Public transport:
From Zurich "Bellevue" tram station (located close to the train station Zurich "Stadelhofen"):
Take Bus 912 or 916 from "Bellevue" to the bus stop "Chinagarten".
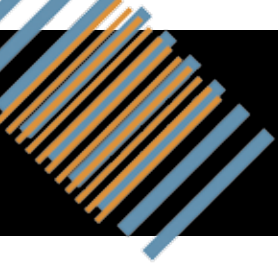


From Zurich main station:
Take Tram 11 to "Bellevue" change here for Bus 912 or 916 to bus stop "Chinagarten".

Selection of Zurich taxis:
Taxi 444:     +41 (0)44 444 44 44
Züritaxi:     +41 (0)44 222 22 22
Alphataxi:     +41 (0)44 777 77 77

Please contact our staff at the registration desk, HPH D Hall (entrance hall ETH science city) for further information.
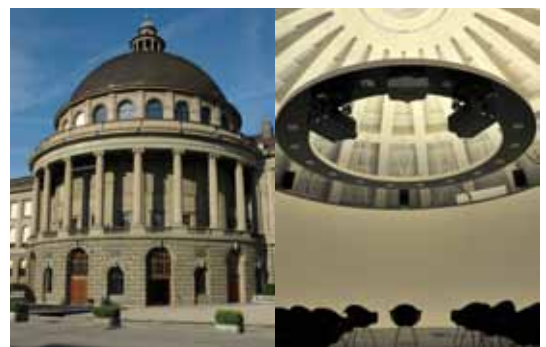
**ICORR Welcome Reception and Research Demos**

The ICORR 2011 social event will take place at the ETH Dome and the roof terrace of the main building on the city campus, with its beautiful view of the Alps. You will be welcomed by the ETH Zurich Vice President of Research and Corporate Relations and director of the Autonomous Systems Lab, Prof. Roland Siegwart. There you may enjoy delicious snacks and drinks and explore many current research projects from ETH Zurich labs working in the field of robotics.

| | |
|---|---|
| Address | ETH Zurich (Dome and roof terrace of main building), Rämistrasse 101, 8092 Zurich |
| Date and time | Thursday, June 30, start at 6.15 p.m. |
| How to get there | Bus: Shuttle buses depart ETH Science City from 6 p.m. |

Public transport:
Tram 6, 9, 10 to ETH / Unispital

Selection of Zurich taxis:
Züritaxi:      +41 (0)44 222 22 22
Taxi 444:     +41 (0)44 444 44 44
Alpha Taxi:   +41 (0)44 777 77 77

*ETH Zurich Research Demos*