

# Medical Robotics Week, 07.-11.06.2021, University of Basel

- MESROB 2021: 07.-09.06.2021
- AUTOMED 2021: 08.-09.06.2021
- Conference Workshops: 10.-11.06.2021 - #MRW2021




## Tentative Program

<b>Monday, 07.06.2021</b>	
Theme: Medical robotics	
08:00	Registration
09:00	Welcome remarks IFTOMM president
09:10	Welcome remarks Representative of Basel City
09:15	Opening of scientific program Representative of the University of Basel
09:20	Topic: The spirit of MESROB <u>Doina Pislă</u>
09:30	Topic: Surgical robotics Plenary talk: <u>Elena De Momi</u>  Embedding AI in robotic surgery
10:15	Coffee break
10:45	Robot-Assisted Laserosteotomy Plenary talk: <u>Cyrill Bärtscher</u> & <u>Hans-Florian Zeilhofer</u> & <u>Stefan Weber</u>
11:30	Demo session: MIRACLE Project PhD students of the MIRACLE Project



12:30	Lunch Break Meeting of the MESROB Scientific Committee (location TBA)	
14:00	Topic: Surgical robotics Keynote: <u>Christos Bergeles</u>  Robotics for Retinal Regenerative Therapy Delivery	Topic: Medical lasers and optics Keynote: <u>Alfred Vogel</u>  Pulsed laser tissue ablation: Mechanisms, and optimization strategies for precision and efficacy
14:40	Technical session	Technical session
16:00	Coffee break	
16:30	Technical session	Technical session
17:30	End of technical program	
18:00	Lab visits	

<b>Tuesday, 08.06.2021</b>	
Theme: Rehabilitation robotics / Assistive devices	
08:00	Registration
09:00	Topic: Rehabilitation robotics Plenary talk: <u>Lorenzo Masia</u>  From Robot-Aided Rehabilitation to Wearable Exosuits: towards a symbiotic assistive technology
09:40	Topic: Rehabilitation robotics Plenary talk: <u>Mohamed Bouri</u>  Lower limb rehabilitation robotics. Sitting position and exoskeleton devices
10:15	Coffee break (Talent scouting)

10:45	Presentation CYBATHLON ( <a href="#">please click here for details</a> )		
11:30	Demo session: CYBATHLON		
12:30	Lunch Break (Talent scouting) Meeting IFToMM Technical Committee Biomechanical Engineering (location TBA)		
14:00	IISAART special session: Standards and best practices in medical robotics Keynote: <a href="#">Thierry Keller</a>		Topic: Navigation Keynote: <a href="#">Roger Gassert</a>
14:40	Technical session	Technical session	
16:00	Coffee break (Talent scouting)		
16:30	Technical session	Technical session	
17:30	End of technical program		
18:00	Gala Dinner		

**Wednesday, 09.06.2021**

Theme: Service robots / Haptics

08:00	Registration
09:00	Award ceremony for senior scientists
09:15	Keynote <a href="#">Manfred Husty</a>
09:45	Keynote <a href="#">Hannes Bleuler</a>

10:15	Coffee break	
10:40	<b>Technical session</b> Keynote: <u>Ross Taylor</u>  A Thirty Year Perspective on Medical Robotics: Yesterday, Today, and Tomorrow	Technical session
12:40	Lunch Break	
14:00	Poster Session	
15:00	Technical session	Technical session
16:20	Coffee break	
16:50	Award ceremony for best papers (research, application, students)	
17:15	Closing remarks	
17:30	End of Conference (MESROB 2021)	

**Thursday, 10.06.2021**

**Industrial track**

Workshop 1 (2 days): [\(Please click here for the details\)](#)

Practical industry workshop for TwinCat3 (Beckhoff) and Matlab/Simulink (Mathworks) – **Day 1**

08:00	Registration
09:00	<b>Welcome &amp; Introduction to real-time systems</b>  Instructors: Georg Rauter, PhD (BIROMED-Lab, Department of Biomedical Engineering, University of Basel, Basel, Switzerland)
09:20	<b>Reading schematics of control cabinets</b>  Instructors: Georg Rauter, PhD

09:40	<b>Software installation and programming platform</b> Instructor: Georg Rauter, PhD
10:00	<b>First steps in Matlab/Simulink</b> Instructor: Vasco Lenzi (The MathWorks GmbH, Bern, Switzerland)
10:40	<b>Coffee Break</b>
11:00	<b>My first Matlab/Simulink program in TwinCat3</b> Instructor: Georg Rauter, PhD
12:40	<b>Lunch Break</b>
14:00	<b>Safety in TwinCAT 3</b> Instructor: Georg Rauter, PhD
15:40	<b>Coffee break</b>
16:00	<b>Implementing a servo motor in Matlab/Simulink for TwinCat3</b> Instructor: Georg Rauter, PhD

### Scientific track

Workshop 2 (1 day): [\(Please click here for the details\)](#)

3D-Motion- tracking systems with and without markers & IMUs

09:00	<b>Optical tracking systems with and without markers &amp; IMUs</b> Instructor: Thomas Seel, PhD (Technical University of Berlin, Berlin, Germany)  Coordination: Beat Göpfert (Department of Biomedical Engineering, University of Basel, Basel, Switzerland)
10:40	<b>Coffee break</b>

11:00	<p><b>Theoretical session: 3D-Motion Tracking with marker, markerless and IMU- Systems</b></p> <p>Instructors: Simi Reality Motion Systems, Qualisys AB          Coordination: B. Göpfert</p>
12:40	<b>Lunch Break</b>
14:00	<p><b>Hands-on session in 3D-Motion Tracking with systems of Simi Reality Motion Systems and Qualisys AB</b></p> <p>Coordination: B. Göpfert</p>
15:40	<b>Coffee Break</b>
16:00	<p><b>Hands-on session in 3D-Motion Tracking with systems of Simi Reality Motion Systems and Qualisys AB</b></p> <p>Coordination: B. Göpfert</p>

**Friday, 11.06.2021**

**Industrial track**

Workshop 1 (2 days): [\(Please click here for the details\)](#)

Practical industry workshop for TwinCat3 (Beckhoff AG) and Matlab/Simulink (Mathworks) – **Day 2**

08:00	<b>Registration</b>
09:00	<p><b>Development of a state machine for a servo motor in Matlab/Simulink for TwinCat3</b></p> <p>Instructor: Georg Rauter, PhD</p>
10:40	<b>Coffee break</b>
11:00	<p><b>Implementation of basic controllers in Matlab/Simulink for control of a servo motor in TwinCAT3</b></p> <p>Instructor: Georg Rauter, PhD</p>

12:40	<b>Lunch Break</b>
14:00	<b>TwinCat3 Vision</b> Instructor: Tobias Bachmann (Technical Support / Application, Beckhoff Switzerland AG, Schaffhausen, Switzerland)
15:40	<b>Coffee Break</b>
16:00	<b>Demonstration of visual servoing using Matlab/Simulink</b> Instructor: Vasco Lenzi
17:20	<b>Demonstration of visual servoing using Matlab/Simulink in TwinCAT3 Vision</b> Instructor: Georg Rauter, PhD
17:35	<b>Wrap up and Conclusions</b> Instructor: Georg Rauter, PhD
17:40	<b>End of workshop day 2</b>

### Scientific track

Workshop 3 (1 day): [\(Please click here for the details\)](#)

### Robotics in Nursing

08:00	<b>Registration</b>
09:00	<b>Welcome &amp; Introduction</b> Presenter: Oliver Mautner, PhD, RN (University Department of Geriatric Medicine Felix Platter, Basel)
09:10	<b>Meet the nursing robot live: Robo Dog, Miro, Pepper</b>

	<p>Presenter: Oliver Mautner, PhD, RN (University Department of Geriatric Medicine Felix Platter, Basel)</p>
09:30	<p><b>Elderly care in times of the 4th industrial revolution: Are robots the future?</b></p> <p>Presenter: Sabina De Geest, PhD, RN (Institute of Nursing Science, Department Public Health, Faculty of Medicine, University of Basel, Switzerland &amp; KU Leuven, Belgium)</p>
10:40	<p><b>Coffee Break</b></p>
11:00	<p><b>Practical applications of robotics in nursing in Swiss health care and beyond</b></p> <p>Presenter: Sandra Engberg, PhD, RN (School of Nursing, University of Pittsburgh, USA)</p>
11:30	<p><b>Ethics of social assistive robots</b></p> <p>Presenter: Tijds Vanmeulebroucke, PhD (Centre for Biomedical Ethics and Law KU Leuven, Belgium)</p>
12:00	<p><b>Legal aspects of robotics in nursing</b></p> <p>Presenter: Elliott Ash, PhD (Center for Law and Economics, ETH Zürich, Switzerland)</p>
12:20	<p><b>Is there a business case for robotics in nursing?</b></p> <p>Presenter: Alexander Thys, MD (Haute Ecole de Commerce, Paris, France)</p>
12:40	<p><b>Lunch Break</b></p>
14:00	<p><b>Case studies robots and group discussion</b> <b>Introduction of goals and methods</b></p> <p>Moderation: Sandra Engberg, PhD, RN</p>



14:10	<p><b>Social Assistive Robot</b>  <a href="https://www.youtube.com/watch?v=Qt98NIE_SRo">https://www.youtube.com/watch?v=Qt98NIE_SRo</a></p> <p>Group discussion</p> <p>Presenters: Oliver Mautner, PhD, RN &amp; Sabina De Geest, PhD, RN</p>
14:50	<p><b>Gait Rehabilitation Robot: the FLOAT</b>  <a href="https://reha-stim.com/de/the-float/">https://reha-stim.com/de/the-float/</a></p> <p>Presenter: Marc Bolliger, PhD  (Spinal Cord Injury Center, University Hospital Balgrist, Zurich, Switzerland)</p>
15:30	<p><b>Coffee break</b></p>
16:10	<p><b>Round table discussion on the research priorities on robotics in nursing</b></p> <p>Moderation: Oliver Mautner, PhD, RN  Presenters: All presenters of the day including older persons</p>
16:50	<p><b>Conclusions</b></p> <p>Presenter: Sabina De Geest, PhD, RN</p>
17:00	<p><b>End of workshop 3</b></p>