

AUTOMED 2021 (MRW 2021 / MESROB 2021)

15th Interdisciplinary Symposium

08.06.2021-09.06.2021

University Hospital Basel, Pathology Lecture Hall,
Schönbeinstrasse 40, 4056 Basel, Switzerland

Tentative Program

Tuesday, 08.06.2021	
MESROB 2021 Optional Program (included in AUTOMED2021 Registration Fee) 09:00 – 12:30	
13:00 – 13:10	Welcome remarks & Conference structure Conference organizer <i>Georg Rauter</i>
13:10 – 13:15	Opening and welcome remarks Dean of the medical faculty, University of Basel: <i>Primo Schär</i>
13:15-15:00	Technical Session 1: Rehabilitation, nursing, assistance, and human performance analysis Identifying disease specific gait kinematics using wearable sensors: knee versus hip osteoarthritis, <i>Annegret Mündermann</i> Machine learning based Freezing of Gait detection for an on-demand cueing system, <i>Vivian Waldheim</i> Workflow for 3D modeling of compliant actuators for active exoskeletons, <i>Lukas Bergmann</i> Towards robotic manipulator assisted positioning in care, <i>Pascal Gliesche</i> followIT - a wrist position annotation tool, <i>Meret Björk Lindanis</i> System identification and control of the ankle joint with functional electrical stimulation, <i>Felix Roehren</i> Combined estimation of gait phase and stair slope utilizing time history data, <i>Florian Weigand</i>
15:00-15:35	Guiding with Touch: Objective assessment and haptic cueing to improve surgical performance on virtual and robotic platforms Keynote: <i>Marcia O'Malley</i>
15:35 – 15:45	Virtual coffee break
15:45 – 17:30	Technical session 2: Novel algorithms in medical data analysis Facial emotion recognition based on localized region segmentation, <i>Herag Arabian</i> On the expansion of training datasets to improve deep learning-based cell organelle recognition in fluorescence microscopy images of virus-infected cells, <i>Nils Busch</i> The effect of different priors on a discrete cosine transformation based EIT algorithm, <i>Rongqing Chen</i> On a simple and fast thresholding method for spike sorting, <i>Markus Chi-Haw Chou</i>

	Actin tail detection in fluorescence microscopic image sequences to investigate the cause of movement of subviral particles, Jan Chowanietz Adversarial samples of a trained convolutional neural network model, Ning Ding Flexible pattern generation for phrenic nerve stimulation, Arnhold Lohse
17:30 – 18:30	Meeting "Fachausschuss" (via private Zoom-link)
18:30	End of technical program

Wednesday, 09.06.2021	
08:30 – 08:35	Welcome remarks Conference co-organizer Philipp Rostalski
08:35 – 09:10	Tool or toy? Additive manufacturing at the point-of-care Keynote: Florian Thieringer
09:10 – 10:40	Technical session 3: Surgical procedures and medical devices High tibial osteotomy reduces compressive loads in the knee medial compartment and increases them in the lateral one during walking, Enrico De Pieri Speed-torque relationship for self-tapping bone screw insertion, Jack Wilkie Concept for the testing of automated functions in medical devices, Sandra Henn Test rig for bone screw insertion modelling, Jack Wilkie Robotic needle steering in deformable tissues with extreme learning machines, Pedro Henrique Suruagy Perrusi, Anna Cazzaniga Data quantity requirements for bone material property identification, Jack Wilkie
10:40 – 11:00	Virtual coffee break
11:00 – 12:30	Technical session 4: Diagnosis, imaging, and surgical treatments Cross-dataset evaluation of a CNN-based approach for surgical tool detection, Tamer Abdulbaki Alshirbaji Microwave confocal image for the localization of lung cancer, Alberto Battistel Kalman filtered depth prediction using Optical Coherence Tomography for laser bone cutting, Yakub Bayhaqi Urethral Stricture model to estimate overdistention of healthy tissue, Ashish Bhave CoBra robot for localized cancer treatment and diagnosis under real-time MRI, Sepaldeep Singh Dhalival 3D Printed Catheters in Organ Perfusion with respect to hemolysis, Susanne Kromnik
12:30 – 13:30	Lunch break
13:30 – 15:15	Technical session 5: Machine learning and models for medical applications Correlation between intra-abdominal pressure and lung mechanics during laparoscopic gynecology, Nour Aldeen Jalal Towards model-based temperature-control for retinal laser therapies, Viktoria Kleyman Combining future and past predictions of a linear Kalman filter for subviral particle tracking, Andreas Rausch

	<p>On estimating the optimal autoencoder model for denoising ECG using Akaike Information Criterion, Fars Samann</p> <p>Using singular value decomposition to adapt Prony's method for signal denoising, Thomas Schanze</p> <p>Classification of movement patterns of subviral particles using a support vector machine, Ricardo Mario Schuhmann</p> <p>Surgical task expertise detected by a self-organizing neural network map, Rongrong Liu</p>
15:15 – 15:30	Virtual coffee break
15:30 – 16:30	<p>Technical session 6: Ventilation</p> <p>Separation of respiration and perfusion in electrical impedance tomography by harmonic analysis, Alberto Battistel</p> <p>The effect of body mass index on pressure controlled ventilator settings, Carlotta Hennigs</p> <p>Analysis of Respiration Induced Movements of the Upper Body in Different Breathing Patterns, Bernhard Laufer</p> <p>System identification of the FiO₂ to SpO₂ relationship during mechanical ventilation, Philip von Platen</p>
16:30 – 16:45	Virtual coffee break
16:45 – 17:00	<p>Best paper awards and closing remarks</p> <p>Philipp Rostalski, Kathrin Lunze, Thomas Seel, Georg Rauter</p>
17:00	End of symposium