Advancing Healthcare through Innovative Technologies and Computational Medicine

Exploring Cutting-Edge Research in Medical Sensors, AI, and Health Analysis

August 3rd 2023, 9:00 - 13:45

Location

TranslaTUM - Central Institute for Translational Cancer Research
Einsteinstraße 25 (Building 522)
81675 Munich, Germany

Contact

Prof. Dr. Martin Daumer
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PROGRAM

9:00 Welcome - Introductory comments
Martin Daumer - *SLC-The Human Motion Institute, Trium Analysis Online*

9:15 Motion control of blood cells
Prof. Dr. Oliver Hayden, MBA - *Heinz-Nixdorf-Chair of Biomedical Electronics / Vice Dean Academic and Student Affairs*

9:30 Student Presentations of the TUM lecture "Clinical Applications of Computational Medicine" (CACOM)

Improving patient safety through movement tracking during telerobotic examination.
Prevent potential risks caused by patient's dangerous movement during performing telerobotic medical examination. A framework for dangerous human movement detection and secure robot retreating trajectory planning.
Yueyang Zhang, Cheng Qian, Wei Hao

What can you eat when you are on medication? Eatable - An App for Medication and Food Interactions
Creation of an app where users can check possible harmful interaction of food and medications.
Isabella Hauer, Max Hochlenert, Aileen Matthä, Johanna Pfleger

From Front to Back: Comparative Analysis of actibelt's Sensor Data
This project explores the feasibility of comprehensive physical activity assessment in clinical trials by comparing sensor data from both the front and back positions of the actibelt wearable device. We apply algorithms designed for front-side data to also analyze the back-side data, paving the way for "dual use" and enabling "BIG DATA" analysis opportunities.
Camilla Artesi, Houssem Baazoug, Yassine Hamila, Intisar Salim, Casra Sam Shahidi, Feng Xu, Peilin Yue, Josephine Melcher

PROGRAM

AI empowered Mole classification App for early skin cancer detection
How to make AI empowered model for skin cancer early detection more trustworthy? We made an App based on classical ABCDE melanoma characterizing method and deep learning methods.
Yifei Peng, Lucie Huang, Fuxiao Liao, Shuo Zhang, Cheng Yan, Zhentao Zhang, Zhenglei Ji, Zhelun Cui

Federated learning for semantic segmentation of Vessel images
The morphological structure of the retinal blood vessels is a crucial factor in preventing ocular diseases. In order to enhance the accuracy of vascular detection, a federated learning-based retinal vessel semantic segmentation model was employed. This approach allows for improved model performance without compromising patient data privacy.
Wei Liu, Junfei Chen, Zhenze Liu, Penghui Wang, Yushi Wan, Yuxuan Yang, Ziyue Yi, Yuxuan Li

Sensor Fusion-based Analysis of Patient Vital Parameters (MITI)
Record vital parameter data using miniature sensors and transfer data to the network to ensure patient monitoring during transport. Analysis of these data and presentation of the data in an appropriate UI.
Susanne Stöckeler, Elif Dogan, Niklas Orner, Sadok Ouali, Aziz Tnani, Ala Ouertani

11:30 Projects@MITI
Franziska Jurosch, Sven Kolb

11:40 -12:10 Discussion, coffee break, time buffer

PROGRAM

Free jumping Mario without Platform: Analysis of accelerometric jump data from Actibelt
After doing the synchronisation of the data sets between the acceleration from Actibelt and the forces from platform, the reconstruction of the ground reaction force (GRF) also the GRF-derived parameters from Actibelt and automatic jump type classification are carried out by using the machine learning methods.
Chenyi lin, Yanbing Liu, Ziyun Zhu, Ganyu Wu, Qian Liu, Mumin Liu, Zewei Sun

Facial Feature Recognition Tool for Dysgnathia Detection and Treatment Risk Assessment
By recognizing and assessing the Dysgnathia characteristics through patient images, we aim to clarify the risks and assist patients in determining whether they require treatment.
Jiaqi Gong, Shaopeng Zhang, Shengxi Yuan, Xinyi Shao, Yanni Zhang

Surface Detection through Gait Analysis
Develop a surface type detection system that can accurately identify different walking surfaces by analyzing the distinctive patterns of human gait on each terrain.
Khalil Smaoui, Youssef Kilani, Malek Dhiab, Nirvana Husadzic, Yassine Ben Chehida, Dominik Viebke

Beyond Earth's Grasp: The Impact of Microgravity on Human Immune System, Endocrine System and Human Microbiome
Literature review of the microgravity impact on human immune system, endocrine system and human microbiome with analysis of the possible future research areas.
Xuehua Xiao, Jinyu Yang, Peng Xu, Jing Zhang

PROGRAM

How good is the actibelt in replacing forceplates?
The actibelt has accelerometer sensors. We will find out if they can replace forceplates in different applications.
Marc Heinzelman, Azra Ahmed

13:45 Closing Remarks

You can reach us here (TranslaTUM):