

## Table of Contents

Lower-Limb Falling Detection System Using Gated Recurrent Neural Networks <i>Francisco Luna-Perejon, Luis Munoz-Saavedra, Javier Civit-Masot, Juan M. Montes-Sanchez, Manuel Dominguez-Morales, and Anton Civit</i>	1
Incremental Learning For Fundus Image Segmentation <i>Javier Civit-Masot, Luis Munoz-Saavedra, Francisco Luna-Perejon, Juan Manuel Montes-Sanchez, and Manuel Dominguez-Morales</i>	5
An Approach to Explainable AI for Digital Pathology <i>Juan Manuel Montes-Sanchez, Luis Munoz-Saavedra, Francisco Luna-Perejon, Javier Civit-Masot, Satur Vicente-Diaz, and Anton Civit</i>	9
EMG-Controlled Robotic Prosthetic Arm With Neural Network Training <i>Javier Civit-Masot, Alfonso Perez-Rodriguez, Francisco Luna-Perejon, Luis Munoz-Saavedra, Manuel Dominguez-Morales, and Anton Civit</i>	11
Proposal of Powered Foot Prosthesis Emulating Motion of Healthy Foot (PEHF) <i>Yoshitoshi Murata, Haruki Baba, and Yukihide Nishimura</i>	14
Proposal of Spring Assist Unit for Walking Disabilities <i>Haruki Baba, Yoshitoshi Murata, and Tomoki Yamato</i>	20
Short-term Changes in Activities of Daily Living and Physical Activity Level of Inpatients Undergoing Rehabilitation Treatment <i>Yukihide Nishimura, Hiroyuki Tsuboi, and Yoshitoshi Murata</i>	26
Multi-action Detection System Using Infrared Omnidirectional Cameras <i>Takashi Imabuchi, Yoshitoshi Murata, and Oky Dicky Ardiansyah Prima</i>	30
A Study of Factors Influencing Health Managers' Acceptance of eHealth Services in the Kingdom of Saudi Arabia <i>Abdullah Alshahrani and Katie MacLure</i>	36
PROPHECY: Patient Reported Outcomes in Prostate Cancer, a Mobile-Health Experience in Radiotherapy <i>Bruno Fionda, Anna Rita Alitto, Vincenzo Frascino, Francesco Catucci, Giuditta Chiloiro, Loredana Dinapoli, Ciro Mazzarella, Vito Lanzotti, Antonio Piras, Andrea D'Aviero, Giovanni Palazzoni, Francesco Preziosi, Vincenzo Valentini, and Giovanna Mantini</i>	39
From Theory to Reality - Health Data Management in a Complex System <i>Eloria Vigouroux-Zugasti, Christian Bourret, and Sylvie Parrini-Alemanno</i>	44
Socio-technical Requirements for Expert Users to Design Structured User-interfaces for OpenEHR-based EHRs	51

<i>Gro-Hilde Severinsen, Line Silsand, Rune Pedersen, and Gunnar Ellingsen</i>	
Barriers and Enablers to Implementation of mHealth Programmes <i>Robyn Whittaker, Rosie Dobson, Gayl Humphrey, and Leah Friedman</i>	58
Communication between Mentor and Mentee Using Videoconferencing in Surgical Training <i>Line Lundvoll Warth</i>	63
Can Increased Patient Involvement Reduce the Number of Surgery Cancellations? Lessons Learned from a Research and Development Project in Norway <i>Kari Dyb and Conceicao Granja</i>	68
Detection and Classification Method for a Temporary Change in Walking <i>Shin Morishima, Misato Haruta, Akira Urashima, and Tomoji Toriyama</i>	74
Near-Infrared Mobile Imaging Systems for e-Health <i>Huseyin Askin Erdem, Isil Erdem, and Semih Utku</i>	80
Privacy Preserving Fuzzy Patient Matching Using Homomorphic Encryption <i>Shiva Ashish Thumparthy and Ilya Sher</i>	85
Reference Design Model for a Smart e-Coach Recommendation System for Lifestyle Support based on ICT Technologies <i>Ayan Chatterjee, Martin W. Gerdes, Andreas Prinz, Santiago G. Martinez, and Anine Christine Medin</i>	87
Combining Patient Pathway Visualisation with Prediction Outcomes for Chemotherapy Treatments <i>Agastya Silvina, Juliana Bowles, and Peter Hall</i>	94
Natural Language Processing, Wearables, and Their Combination in Healthcare: Opportunities, Challenges, and Considerations <i>Frank Rudzicz, Raymond Ng, Robert Wu, Mohamed Abdalla, Giuseppe Carenini, and Kendall Ho</i>	100
Relationship Between Breath Regulation and Stroke Volume with Exercise Intensity: a Pilot Study <i>Wei-Chen Lai, Po-Hsun Huang, and Tzu-Chien Hsiao</i>	105
Electrocardiography Signal Decomposition Using a Novel Modulated Ensemble Empirical Mode Decomposition Method <i>Chun-Hsiang Huang, Po-Hsun Huang, and Tzu-Chien Hsiao</i>	109
Towards Estimations of Continuous Cardiac Output with Impedance Cardiography: a Pilot Study <i>Chao-Ting Liu, Po-Hsun Huang, and Tzu-Chien Hsiao</i>	115
Towards a National Clinical Decision Support Framework for Norway: Expert Assessment and Proposed	119

## Architecture

*Luis Marco-Ruiz, Kristian Malm-Nicolaisen, Alexandra Makhlysheva, and Rune Pedersen*

Investigation on the Use of the PE873 Conductive Ink for Surface EMG Measurements <i>Andrea Federico, Marco Belcastro, Pasqualino Torchia, Salvatore Tedesco, and Brendan O'Flynn</i>	127
Development of a Program for Analytical Systems of Personal Diagnostics of People and Animals Based on the Piezoelectric Sensors Array <i>Ruslan Umarkhanov, Tatiana Kuchmenko, Ivan Murakhovsky, and Daria Kuchmenko</i>	132
Emotional Self-Awareness System for Mental Health <i>Olufemi Isiaq and Saeed Masooma</i>	135
Leveraging Machine Learning and Natural Language Processing for Monitoring E-health Publications <i>Andrius Budrionis, Rune Pedersen, Torbjorn Torsvik, Karianne Lind, and Omid Saadatfard</i>	142
Comparison of Bed-Sensors for Nocturnal Behaviour Assessment <i>Bruce Wallace, Frank Knoefel, Rafik Goubran, Jeffrey Kaye, and Neil Thomas</i>	147
User Experience Design for Persons Living With Dementia- Current Methods and Experimental Experience <i>Sabrina Knappe, Bruce Wallace, Laura Ault, Rafik Goubran, Neil Thomas, and Frank Knoefel</i>	154
Spatial Awareness for the Deafblind in Natural Language Presentation using SPIN Rules: A Use Case in the SUITCEYES Platform <i>Vasileios Kassiano, Thanos Stavropoulos, Spiros Nikolopoulos, Ioannis Kompatsiaris, and Marina Riga</i>	160
Analysis on the Impact of GDPR in Healthcare-related Blockchain Solutions and Guidelines for Achieving Compliance <i>Christos Kontzinos, Panagiotis Kapsalis, Spiros Mouzakitis, Michael Kontoulis, Ourania Markaki, Dimitris Askounis, Haralampos Karanikas, Alexandros Christodoulakis, and Panagiotis Dimitrakopoulos</i>	166
Detection of Health-Related Problems of People with Dementia from Lifestyle Wearables: A Rule-Based Approach <i>Antonios Pliatsios, Thanos Stavropoulos, Dimitris Strantsalis, Vasileios Kassiano, Spiros Nikolopoulos, and Ioannis Kompatsiaris</i>	172
The Use of Electronic Signature in Processes and Applications of the Croatian Agency for Medicinal Products and Medical Devices <i>Arian Rajh, Dubravka Sudic, and Katarina Gvozdanic</i>	178
The Core of Design Thinking and its Impact on Digital Transformation in Healthcare <i>Niels Garmann-Johnsen, Migle Helmersen, and Tom Roar Eikebrokk</i>	183