

2024 16th International Conference on Human System Interaction (HSI 2024)

**Paris, France
8-11 July 2024**



**IEEE Catalog Number: CFP2421D-POD
ISBN: 979-8-3503-6292-3**

**Copyright © 2024 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP2421D-POD
ISBN (Print-On-Demand):	979-8-3503-6292-3
ISBN (Online):	979-8-3503-6291-6
ISSN:	2158-2246

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

S-Mask: An Interactive Smart Face Mask for Breathing Exercises.....	1
<i>Mu-Rong Li, Edward T.-H. Chu, Chia-Rong Lee</i>	
User Perception of Robot Behavior as a Function of Previous Experience with Robots	9
<i>Kristina Nikolovska, Jan Pohl, Bernhard Hommel, Arvid Kappas, Francesco Maurelli</i>	
Identification of Contact and Non-Contact Finger Motion using Surface Electromyography(sEMG): An Explainable AI Approach	16
<i>Fasih M. Malik, Daiki Sodenaga, Issei Takeuchi, Seiichiro Katsura</i>	
Image Generation with Interactive Evolutionary System using Bayesian Optimization	22
<i>Y. Dianey Rueda-Arango, David Rojas-Velazquez, Aleksandra V. Gorelova, Johan Garssen, Alberto Tonda, Alejandro Lopez-Rincon</i>	
GameMentor: Customized Tutorial for Video Games	29
<i>Zahra E. Jouibari, Hosein N. Moakhhkar, Marek Z. Reformat</i>	
Machine-Learning Analysis of mRNA: An Application to Inflammatory Bowel Disease	35
<i>David Rojas-Velazquez, Sarah Kidwai, Luciënne De Vries, Péter Tözsér, Luis O. Valencia- Rosado, Johan Garssen, Alberto Tonda, Alejandro Lopez-Rincon</i>	
A Crowd Model Evaluation Method for Autonomous Mobile Robot Simulator	42
<i>Rio Nishida, Yuka Kato</i>	
Generative AI in Cyber Security of Cyber Physical Systems: Benefits and Threats	48
<i>Harindra S. Mavikumbure, Victor Cobilean, Chathurika S. Wickramasinghe, Devin Drake, Milos Manic</i>	
Evaluating the Efficacy of Large Language Models in Identifying Phishing Attempts	56
<i>Het Patel, Umair Rehman, Farkhund Iqbal</i>	
A Novel Health Care System for Improving Dermatological Diagnosis: A Model for Skin Lesion Classification	63
<i>Atif Mehmood, Ahed Abugabah, Farah Shahid</i>	
Exploiting Voice-Controlled Devices to Infer the Layouts of Private Spaces	68
<i>Tasnia A. Heya, Abdul Serwadda</i>	
Modeling the Impact of Mental Models on Interactive Decision-Making and Behavior	76
<i>Chuyang Wu, Jussi P. P. Jokinen</i>	
Prototyping the Monitoring Applications in Public Buildings using Edge Computing Paradigm.....	83
<i>Aliaksei Andrushevich, Iosif Vojteshenko, Dzmitry Protasenia</i>	
From Perception to Participation: Rethinking Research on Phantom Vibration Syndrome Through Citizen Science and Smartphone Technology	89
<i>Martin Biallas, Andrew Paice</i>	
Variational Recurrent Neural Networks (VRNN) for RUL Estimation	95
<i>Amal Ayadi, Mohamed A. Benatia, Ramzi Chaieb, Anne Louis</i>	

Capturing Real-Time Behavior of Post Stroke Survivors using Mobile Technologies.....	101
<i>Prasad Hettiarachchi, Isuru Senadheera, Rashmika Nawaratne, Brendon Haslam, Daminda Alahakoon, Leeanne Carey</i>	
Comparison of Individualized and Group-Based Machine Learning Approaches to Predict Rate of Perceived Exertion of Professional Football Players.....	109
<i>Iwen Diouron, Sébastien Harispe, Abdelhak Imoussaten, Massiwa Chabbi, Maëlia Duhart, Antoine Joffroy, Lucas Texier, Guilhem Escudier, Gérard Dray, Stéphane Perrey</i>	
Design and Evaluation of a Self-Adaptive Strategy for Movement Modulation in Virtual Rehabilitation	115
<i>Liu Wang, Mengjie Huang, Jianqing Liu, Siyu Xiao, Rui Yang</i>	
Workshop with Cognitively Impaired Persons Evaluating a Website Redesign using a Clickable Mock-Up	121
<i>Edith Birrer, Clemens Nieke, Martin Biallas</i>	
Pilot Experiences on Independent Living in High Age via Non-Invasive Multisensory Data Analytics.....	127
<i>Aliaksei Andrushevich, Martin Camenzind, C. Nieke, Paolo Olivetti, Roberta Bevilacqua, Lorena Rossi</i>	
Age and Multimodal Signals on Smartphone Devices	133
<i>Sabine Theis, Matthias Wille, Matthias G. Arend, Verena Nitsch, Alexander Mertens</i>	
Cost Effective Rebar Inspection using Point Cloud Data	141
<i>Mohamed A. Talbi, Hamdi Amroun, Mehdi Ammi</i>	
The Influence of Haptic Feedback and Visual Information on Multi-Limb Coordination	147
<i>Kihun Hong, Ada Kanapskyte, Harshavardhana T. Gowda, Wilsaan M. Joiner, Lee M. Miller, Stephen K. Robinson, Sanjay S. Joshi, Jonathon S. Schofield</i>	
Probabilistic Decision Tree Ensembles for Detecting Infectious Diseases using Routine Blood Tests.....	153
<i>Selestine Melchane, Youssef Elmir, Farid Kacimi, Larbi Boubchir</i>	
Soft-Attention Based Person Re-Identification in Real-World Settings using Variational AutoEncoders	159
<i>Emna B. Baoues, Imen Jegham, Mounim El Yacoubi, Anouar B. Khalifa</i>	
Development of a Cost-Effective Artificial Intelligence-Based Image Processing Sorting Mechanism for Conveyor Belt System.....	165
<i>Nicolaas Luwes, Wilhelmus Pretorius</i>	
Creating a Digital Twin for a Hydroponic Green Fodder System to Evaluate an Improved Airflow Configuration.....	171
<i>Nicolaas Luwes, Hendrik C. Brits, Kyle P. Badenhurst, Evane D. Bester</i>	
AI-Powered Cleaning Robot: A Sustainable Approach to Waste Management.....	176
<i>Johan Carcamo, Ahmad Shehada, Arda Candas, Nirav Vaghasiya, Murad Abdullayev, Andrii Melnyk, Jacek Ruminski</i>	
Emotional Elements in Scientific Publications' Abstracts: An Affective-Centric Experiment	182
<i>Sepideh Kalateh, Inês C. Oliveira, Luis A. Estrada-Jimenez, Sanaz N. Hojjati, Jose Barata</i>	
High-Fidelity Texture Generation for 3D Avatar Based on the Diffusion Model.....	190
<i>Hao Cheng, Y. Hui, Haodong Jin, Sunjie Zhang</i>	

Causal Reasoning in Large Language Models using Causal Graph Retrieval Augmented Generation.....	196
<i>Chamod Samarajeewa, Daswin De Silva, Evgeny Osipov, Damminda Alahakoon, Milos Manic</i>	
Ergometer-Based Lower Limb Rehabilitation Robot for Post-Stroke Hemiplegic Patients with Voluntary Movement Induction using Muscle Synergy	202
<i>Daisuke Chugo, Yuya Miyazaki, Honoka Kubo, Satoshi Muramatsu, Sho Yokota, Jin-Hua She, Keio Ishiguro, Hiroshi Hashimoto</i>	
Exploring Success Factors of Agile Teams: The Impact of Personality Traits, Psychological Safety, and Team Reflexivity on Performance	208
<i>George Eleftherakis, Vanya Dimitrova, Desislava Maglova, Vasiliki Morogianni</i>	
A Mammography Data Management Application for Federated Learning	214
<i>Dmytro Tkachenko, Magdalena Mazur-Milecka</i>	
Enhancing Facial Palsy Treatment Through Artificial Intelligence: From Diagnosis to Recovery Monitoring.....	220
<i>Antoni Górecki, Magdalena Mazur-Milecka</i>	
Knee Joint Assist Method Focusing on Joint Viscosity Properties using IMU-Based Exoskeleton Assist Device.....	226
<i>Tomotaka Sugino, Yusuke Shimoda, Manabu Okui, Taro Nakamura</i>	
GANet: Gabor Attention Aggregation Network for Palmvein Identification	233
<i>Hongchao Liao, Xin Jin, Hongyu Zhu, Yuming Fu, Mounim A. El Yacoubi, Huafeng Qin</i>	
Genetic-Algorithm-Based Road Traffic Network Division with Improved Refining.....	239
<i>Tomas Potuzak</i>	
Controller Evaluation for Earthwork Teleoperation and Training in Virtual Reality.....	246
<i>Léa Saunier, Marius Preda, Catalin Fetita</i>	
Data Domain Adaptation in Federated Learning in the Breast Mammography Image Classification Problem	252
<i>Lukasz Erimus, Aleksandra Borowska, Adrian Jaromin, Agnieszka Lewko, Jacek Ruminski</i>	
Enhancing Neural Machine Translation of Indigenous Languages Through Gender Debiasing and Named Entity Recognition	258
<i>Ngoc T. Le, Fatiha Sadat</i>	
PAPR Reduction in OTFS Systems using Multi Weighted Fractional Fourier Transform Analysis.....	263
<i>Fatma B. Salah, Abdelhakim Khelifi, Marwa Rjili, Belgacem Chibani</i>	
Pink Guardian: A Gateway to Early Breast Cancer Detection.....	269
<i>Kanchan S. Maurya, Youshan Zhang</i>	
Design and Preliminary Experiment of Head Support Device to Reduce Neck Burden in Overhead Work.....	276
<i>Chengsong Yao, Sho Yokota, Akihiro Matsumoto, Daisuke Chugo, Satoshi Muramatsu, Hiroshi Hashimoto</i>	
Inverted Residual Bottlenecks with Large Kernel Attention for Remote Scene Classification	281
<i>Russo Ashraf, Adri Priadana, Cao Ge, Kanghyun Jo</i>	
Maternal Health Risk Assessment using Digital Twin Application	287
<i>Paulina Leszczelowska, Magdalena Mazur-Milecka, Natalia Kowalczyk, Milena Sobotka</i>	

EMPCNet: Facial Attribute Recognition using Efficient Multi-Perspective Convolution for Human-Robot Interaction.....	293
<i>Adri Priadana, Duy-Linh Nguyen, Xuan-Thuy Vo, Russo M. A. Uddin, Kanghyun Jo</i>	
Exploring the Use of Synthetic Training Data for the Classification of Electronic Components in Artificial Intelligence Systems	299
<i>Bernardus C. Bothma, Nicolaas Luwes</i>	
Human Pose Estimation Based Biomechanical Feature Extraction for Long Jumps	305
<i>Qi Gan, Sao M. Nguyen, Mounim A. El-Yacoubi, Eric Fenaux, Stéphan Cléménçon</i>	
Panoptic Segmentation of CT Images of Non-Small Cell Lung Cancer Data	311
<i>Sankarsan Seal, Dipti P. Mukherjee</i>	
Development of Hands-Free Crutch with Passive Load-Sensitive Joint Capable Locking Rotation	317
<i>Atsushi Kawasaki, Sho Yokota, Akihiro Matsumoto, Daisuke Chugo, Satoshi Muramatsu, Hiroshi Hashimoto</i>	
Real-Time Skin Quality Assessment System.....	323
<i>Aleksandra Krajna, Tomasz Kocejko</i>	
Exploring the Efficacy of Text Embeddings in Early Dementia Diagnosis from Speech.....	329
<i>Khaoula Ajroudi, Mohamed I. Khedher, Olfa Jemai, Mounim A. El-Yacoubi</i>	
Endoskeletal Deep Vein Thrombosis Prevention Device using a Combining Intermittent Pneumatic Compression and Assisted Ankle Exercises	335
<i>Akihiro Kobayashi, Manabu Okui, Taro Nakamura</i>	
How Does a Single EEG Channel Tell Us About Brain States in Brain-Computer Interfaces?	342
<i>Zaineb Ajra, Binbin Xu, Gérard Dray, Jacky Montmain, Stephane Perrey</i>	
Remote Monitoring System for the Elderly People Based on a Contextual Bandit Approach	348
<i>Wafa B. Taleb, Olfa Jemai</i>	
Pulse Transit Time - Fiducial Points Accuracy Determination as Examined by Means of Synthetic Signals	354
<i>Artur Polinski, Adam Bujnowski, Tomasz Kocejko, Jerzy Wtorek</i>	
Continuous Biomedical Monitoring in VR Scenarios of Socially Smart and Safe Autonomous Vehicle Interaction.....	360
<i>Tomasz Kocejko, Abdeljalil Abbas-Turki, Alexandre Brunoud</i>	
Learning Sperm Cells Part Segmentation with Class-Specific Data Augmentation.....	366
<i>Marcin Jankowski, Emilia Lewandowska, Hugues Talbot, Daniel Wesierski, Anna Jezierska</i>	
A Novel Device and System for Fall Detection Under the Shower.....	372
<i>Adam Bujnowski, Bartłomiej Rajzer, Alexey Andrushevich, Artur Polinski, Mariusz Kaczmarek, Jerzy Wtorek</i>	
Driver Fatigue Detection Method Based on Facial Image Analysis	378
<i>S. Cichocka, J. Ruminski</i>	
Diagnostics of the Peripheral Artery Disease with Use of Glucose Sensor - A Proof of Concept.....	384
<i>Ignacy Rogon, Jakub Brzezinski, Adam Bujnowski, Mariusz Kaczmarek, Jerzy Wtorek</i>	

Codeless, Inclusive, and End-to-End Robotized Manipulations by Leveraging Extended Reality and Digital Twin Technologies.....	388
<i>Niklas Hübel, Eric Guiffo Kaigom</i>	
Assessing the Interpretability of Machine Learning Models in Early Detection of Alzheimer's Disease	394
<i>Karim Haddada, Mohamed I. Khedher, Olfa Jemai, Sarra I. Khedher, Mounim A. El-Yacoubi</i>	
PHY- MAC Cross-Layer Design for Body Pathloss Mitigation.....	400
<i>Namarig M. Taha, Ahmed M. Alhassan, Amin B. Abdelnabi, E. L. Hadj Dogheche</i>	
Towards Guided Back-Translation for Low-Resource Languages- A Case Study on Kabyle-French.....	405
<i>Nassim Diab, Fatiha Sadat, Nasredine Semmar</i>	
A Survey of Conversational Styles and Systems	409
<i>Rashmi Nagpal, Sankung Fatty, David G. Brizan</i>	
Secure Localization using Federated Learning and Blockchain: A Survey	413
<i>Marwa Zamzam, Yasmine Zaghloul</i>	
Early-Stage Parkinson's Disease Detection Based on Optical Flow and Video Vision Transformer.....	419
<i>Anas F. Razzouki, Laetitia Jeancolas, Graziella Mangone, Sara Sambin, Alizé Chalançon, Manon Gomes, Stéphane Lehericy, Jean-Christophe Corvol, Marie Vidailhet, Isabelle Arnulf, Mounim A. El-Yacoubi, Dijana Petrovska-Delacrétaz</i>	
GT&I_GAN: A Generative Adversarial Network for Data Augmentation in Regression and Segmentation Tasks	425
<i>Hajar Hammouch, Sambit Mohapatra, Mounim El-Yacoubi, Huafeng Qin, Hassan Berbia</i>	
Secure Audio Classification for Voice Assistants: A Multi-Party Homomorphic Approach.....	431
<i>Tasnia A. Heya, Abdul Serwadda</i>	
Improving Alzheimer's Diagnosis using Vision Transformers and Transfer Learning	439
<i>Marwa Zaabi, Mohamed I. Khedher, Mounim A. El-Yacoubi</i>	
PredictStr: A Balanced Benchmark Dataset for Improve Stroke Prediction.....	445
<i>Taissir F. Romdhane, Mohamed I. Khedher, Mounim A. El-Yacoubi</i>	
Enhancing Human Pose Estimation with SE-Block in the OmniPose Model	451
<i>Khac-Anh Phu, Van-Dung Hoang, Van-Tuong-Lan Le, Thanh V. Le</i>	
Towards Retrieval Augmented Generation Over Large Video Libraries	457
<i>Yannis Tevissen, Khalil Guetari, Frédéric Petitpont</i>	
Spectrogram and LSTM Based Infant Cry Detection Method for Infant Wellness Monitoring Systems.....	461
<i>Sivaranjini P. Narayanan, M. Sabarimalai Manikandan, Linga R. Cenkeramaddi</i>	
Fuzzy Dates in Personal Knowledge Graphs and Dialogue, the Example of “LifeLine”	465
<i>Hugues Sansen, Gérard Chollet, Kristiina Jokinen, Maria I. Torres, Jérôme Boudy, Mossab Hariz</i>	
Automated Parking Management for Urban Efficiency: A Comprehensive Approach	470
<i>Tomasz Ludwisiak, Magdalena Mazur-Milecka</i>	
Domain Adaptation for Inpainting-Based Face Recognition Studies	474
<i>Kamil Kopryk, Milena Sobotka, Jacek Ruminski, Paulina Leszczelowska</i>	