Lisbon School of Medicine (FMUL)

JOINT MASTER's
Innovative Technologies and Contemporary, Integrated Healthcare in Aging (ITHA)

Hellenic Mediterranean University (HMU)

SYMPOSIUM

Introducing the New Era of Ageing Healthcare in a Digital World:

Cutting-edge Technologies and Inclusive Innovations for Healthy Longevity

The symposium is organized as part of the dissemination activities of the **Joint Master's Programme**

INNOVATIVE TECHNOLOGIES AND CONTEMPORARY, INTEGRATED HEALTHCARE IN AGING (ITHA)

Online attendance:
https://bit.ly/3Qyd1DY
Scan to join:

DATE: Tuesday, May 5, 2026

TIME: 10:00 a.m. – 2:00 p.m.

VENUE: HMU-School of Health Sciences Auditorium

Executive Structure NSRF
MINISTRY OF EDUCATION RELIGIOUS AFFAIRS AND SPORTS
HELLENIC REPUBLIC
MINISTRY OF EDUCATION, RELIGIOUS AFFAIRS AND SPORTS
Greece 2.0
NATIONAL RECOVERY AND RESILIENCE PLAN
Funded by the European Union
NextGenerationEU

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SYMPOSIUM PROGRAMME

9:30 – 10:00

Arrival & Participant Registration

10:00 – 10:30

Welcome Addresses

- Prof. Nikolaos Katsarakis – Rector, Hellenic Mediterranean University (HMU)
- **Prof. Doutor João Eurico Cabral da Fonseca -** Dean, **Faculty of Medicine, University of Lisbon**
- Prof. Konstantinos Petridis – Vice Rector, Hellenic Mediterranean University (HMU)
- Assoc. Prof. Maria Papadakaki, Head of the Department of Social Work (HMU)
- Prof. Nikolaos Papadakis, Head of the Department of Electrical and Computer Engineering (HMU)
- Assoc. Prof. George Fragkiadakis, Head of the Department of Nutrition and Dietetics Sciences (HMU)

PANEL 1: Strategic Reform and Workforce Education in Aging Healthcare

Chairs: Argyroula Kalaitzaki & Konstantinos Petridis

10:30 – 10:50
Rethinking Ageing: Why Health Systems Must Transform Now
Dr. Symeon Panagiotakis

10:50 – 11:10
Transforming Ageing Healthcare: Building Digital-Ready Systems and Professionals for a Longevity Society
Prof. Nikolaos Vidakis

11:10 – 11:30
Educating the Next Generation of Leaders in Ageing Care: Presentation of the Joint Master's Programme: "Innovative Technology and Contemporary Integrated Healthcare in Ageing"
Prof. Argyroula Kalaitzaki

11:30 – 12:00
Coffee Break

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PANEL 2 —Digital Innovation & Intelligent Technologies for Healthy Ageing

Chairs: George Fragkiadakis & Paulo Veloso Gomes

12:00 – 12:20
Enhancing Care through Technology: Robotics, Smart Monitoring, IoT and 3D Printing in Modern Ageing Healthcare Systems. The case of NeuroTune Academic Project
Prof. Vítor J. Sá

12:20– 12:40
Virtual Reality and AI for Cognitive and Emotional Well-being in Older Adults
Prof. Paulo Veloso Gomes

12:40 – 13:00
Ethical Governance and Data Protection in the European Health Data Space (ECDS): Digital Health, Ageing, and Emerging Inequalities
Assoc. Prof. Henrique Curado

13:00 – 13:20
Ambient Intelligence: Turning Everyday Objects into Invisible Health Monitors (online presentation)
Assoc. Prof. Hugo Alexandre Ferreira

13:20 – 14:00

Audience Q&A, Conclusions & Closing Remarks

Chairs: Argyroula Kalaitzaki, George Fragkiadakis & Paulo Veloso Gomes

Symeon Panagiotakis

Affiliation: MD, MSc, PhD. Consultant Physician, Internal Medicine Department, Heraklion University Hospital. Fellow of the Institute of Agri-Food and Life Sciences, University Research Centre, Hellenic Mediterranean University, Greece

Brief CV: Dr. Symeon Panagiotakis is an attending physician in the Department of Internal Medicine of the University Hospital of Heraklion since 2007, Senior Consultant in the Geriatrics Clinic of the same Hospital since 2008, Clinical Associate in the Departments of Elderly Care Unit of St Thomas and Guy's Hospitals London (2005-2006), MSc in Gerontology at King's College University of London (2007), PhD in Clinical Virology at the University of Crete (2007), Internal Medicine Residency (1998-2004). Collaborating Researcher at the Research Center "Institute of Agri-Food and Life Sciences" of the Hellenic Mediterranean University since 2021 and member of the Working Group for the development of Geriatrics in Greece and the Hellenic Society for the Study and Research in Aging (EEMEG). Instructor, after assignment, of Erasmus medical students and students from Boston Medical School in geriatrics services in Heraklion University Hospital.

Nikolaos Vidakis

Affiliation: Vice Rector of Finance, Programming, Development and Student Affairs of the Hellenic Mediterranean University (HMU), Department of Electrical and Computer Engineering of HMU, CEO of the Property Development and Management Company of HMU, Head of R&D Group NILE, and of Laboratory AISE, Greece

Brief CV: Dr. Nikolaos Vidakis is a Professor at the Department of Electrical and Computer Engineering of the Hellenic Mediterranean University, specializing in Technologies of Interactive Learning Software. He holds a PhD from the Technical University of Vienna and a BSc from Northumbria University. He has participated in numerous EU-funded research projects and teaches courses in software engineering, data visualization, and game development. He leads the NILE Lab and has supervised many theses and internships. His research focuses on software engineering, serious games, educational virtual environments, and emerging technologies such as AR/VR and multimodal interaction.

Argyroula Kalaitzaki

Affiliation: Professor of Clinical Psychology, Department of Social Work, Quality of Life Laboratory *(Qol), School of Health Sciences,* Hellenic Mediterranean University, Greece

Brief CV: Dr. Argyroula Kalaitzaki is a Professor of Clinical Psychology at the Hellenic Mediterranean University (HMU) and a member of the Quality of Life Lab. She chairs the HMU's Gender Equality and Combating Discrimination Committee and sits on the MSc Programme Committee for the Interdisciplinary Management of Chronic Diseases, Disability and Ageing. She holds two PhDs and the European Diploma in Psychological Therapies. Her extensive teaching and research experience and publication work focus on interpersonal relationships, aging, dementia, trauma, chronic illness, and health literacy, drawing on Clinical and Positive Psychology.

Vítor J. Sá

Affiliation: LabRP/CIR, ESS, Polytechnic of Porto, Portugal

Brief CV: Dr. Vítor J. Sá is a Professor at the School of Health of the Polytechnic University of Porto. He is a researcher at the Psychosocial Rehabilitation Laboratory, mainly using Virtual Reality and Multimodal Interaction technologies. For four years he was a researcher at Fraunhofer IGD in Germany, and he earned his PhD with the thesis "Gestural Dynamics with Skin Conductivity - a Multimodal Approach for Biometric Authentication". At Universidade Católica Portuguesa he held the positions of Director of the Institute of Computing and Data Science and Coordinator of the Degree in Applied Data Science. Its main areas of teaching/research are Virtual Reality, Multimodal Interaction, Digital Health, Computer Graphics, Bioinformatics, Computer Programming, Project Management, Information Security and Media Arts.

Paulo Veloso Gomes

Affiliation: LabRP/CIR, ESS, Polytechnic of Porto, Portugal

Brief CV: Dr. Paulo Veloso Gomes holds a PhD in Information and Communications Technology from the University of A Coruña and an MSc in Information Management from the University of Porto. He is a researcher and professor specializing in immersive technologies (VR/AR/XR) applied to healthcare, defense, military training, strategic communication and education. He works at the Psychosocial Rehabilitation Laboratory, Center for Rehabilitation Research, School of Health, Polytechnic Institute of Porto, Portugal. He develops and studies interactive environments that promote emotional awareness, resilience, and human-centered training, bridging innovation, ethics, and empathy. His work focuses on virtual and augmented reality for mental health, stress management, pain reduction, and cognitive rehabilitation, integrating biofeedback, gamification, and digital ethics to enhance well-being, empathy, and decision-making.

Henrique Curado

Affiliation: LabRP/CIR, ESS, Polytechnic of Porto, Portugal

Brief CV: Dr. Henrique Curado holds a Licentiate degree in Law, a PhD in Law, an MSc in European Economics, and qualifications in Management and Taxation. He is an Associate Professor at the ESS of P. PORTO, coordinating Health Management and Administration. He was Legal Advisor to the Government of Timor-Leste and a UNDP consultant, and has collaborated with universities in Timor-Leste, Spain, and Brazil. He teaches Health and Labour Law, health systems, information security, and data protection. Former Vice-President of P. PORTO and former SNESup board member, he is a researcher at LabRP-CIR.

Hugo Alexandre Ferreira

Affiliation: Associate Professor and Researcher, Institute of Biophysics and Biomedical Engineering, Faculty of Sciences, University of Lisbon, Portugal

Brief CV: Dr. Hugo Alexandre Ferreira is an Associate Professor at the Faculty of Sciences of the University of Lisbon and Researcher at the Institute of Biophysics and Biomedical Engineering, where he co-leads the research line in Digital Health, Ageing, Sports and Wellbeing. His work spans biomedical engineering, AI, and biosignal and medical imaging processing and analysis, focusing on real-world health monitoring, human performance, and clinical translation. He combines teaching, research, and clinical practice with a strong interest in longevity, developing technologies and frameworks that support healthy ageing, resilience, and personalized healthcare.

Abstracts

Rethinking Ageing: Why Health Systems Must Transform Now

Symeon Panagiotakis

The global population is aging at an unprecedented rate, shifting the demographic landscape from a focus on youth to an ageing society. While life expectancy has increased, it has not been matched by a corresponding increase in health span—the years lived in good health free from chronic disease. This gap between longevity and quality of life is creating immense strain on healthcare systems, which are largely designed to treat acute illness rather than manage complex, chronic, and age-related conditions. Rethinking Ageing: Why Health Systems Must Transform Now highlights that the prevailing reactive, fragmented approach to geriatric care is unsustainable, costly, and fails to meet the needs of older adults, particularly with rising incidences of multi-morbidity and dementia. The presentation tackles that immediate, transformative action is necessary, transitioning from a model of 'treating illness' to one of 'promoting healthy aging'. Key areas of transformation include shifting care from hospitals to community-based and home-based settings, embedding geriatrics into primary care training, strengthening social care services, and leveraging digital technologies such as AI, telemedicine, and robotics for preventive monitoring. Furthermore, it addresses the urgent need to combat ageism within clinical settings and provide support for informal caregivers. By adopting an integrated, person-centered approach that prioritizes functional ability over simply increasing lifespan, health systems can ensure long-term sustainability while supporting dignified and active aging, making this transformation an essential investment for the future.

Transforming Ageing Healthcare: Building Digital-Ready Systems and Professionals for a Longevity Society

Nikolaos Vidakis

This presentation explores the transformation of ageing healthcare systems through the integration of digital technologies and generative artificial intelligence. It highlights a critical inefficiency in modern clinical practice: healthcare professionals spend significantly more time on administrative documentation than on direct patient care, contributing to burnout and reduced care quality. The proposed solution centers on the use of AI-powered tools, particularly large language models acting as "AI scribes," which can automatically convert unstructured patient–clinician conversations into structured clinical records in real time. This innovation aims to reduce administrative burden, streamline workflows, and allow clinicians to focus on patient-centered care. The presentation also discusses the broader generative AI toolkit in biomedicine, emphasizing its ability to structure fragmented healthcare data into meaningful clinical narratives. However, it acknowledges key limitations, including risks of hallucinations, data bias, privacy concerns, and overreliance on AI systems. Importantly, the framework aligns with regulatory principles such as the EU AI Act, reinforcing the need for human oversight, ethical safeguards, and accountability. Ultimately, the work argues that generative AI should not replace clinical reasoning but enhance it, repositioning clinicians as decision-makers supported by intelligent, efficient digital systems in a longevity-focused society.

Educating the Next Generation of Leaders in Ageing Care: Presentation of the Joint Master's Programme: "Innovative Technology and Contemporary Integrated Healthcare in Ageing"

Argyroula Kalaitzaki

The accelerating demographic shift toward ageing populations has created an urgent global need for professionals capable of understanding the innovative, integrated, and technology-enabled solutions that support autonomy, dignity, and quality of life in later adulthood. The *Joint Master's Programme in Innovative Technologies and Contemporary, Integrated Healthcare in Ageing* responds directly to this need by offering a comprehensive, interdisciplinary curriculum that prepares students to address the complex challenges of longevity across health, social care, and technological domains. This 90-ECTS programme spans three semesters across two leading European institutions, the Hellenic Mediterranean University and the University of Lisbon, and is delivered through a flexible hybrid and blended format, available in both full-time and part-time modes. Students are trained in cutting-edge digital health technologies, assistive and smart-home systems, integrated care pathways, interdisciplinary teamwork, and innovation management within the expanding Silver Economy. **Through experiential learning, mobility, and exposure to diverse academic environments, students develop the competencies required to meet the complex care needs of ageing populations in the digital age, delivering both person-centred and technology-supported models of care.** During the presentation, an overview will also be provided of the programme's admission criteria, number of student places, and additional practical information relevant to prospective applicants. By combining technological innovation with contemporary healthcare approaches, the programme aims to cultivate a new generation of specialists equipped to shape the future of global longevity and contribute to sustainable, equitable ageing societies.

Enhancing Care through Technology: Robotics, Smart Monitoring, IoT and 3D Printing in Modern Ageing Healthcare Systems. The case of NeuroTune Academic Project

Vítor J. Sá

Focal dystonia is a neurological movement disorder characterized by involuntary muscle contractions that disrupt motor control during specific tasks. While well documented in musicians – affecting pianists, guitarists, and wind instrument players – focal dystonia also manifests in older adults, frequently presenting as blepharospasm, cervical dystonia, or Meige syndrome, and remains significantly underdiagnosed in ageing populations. The NeuroTune project, developed at School of Health of the Polytechnic University of Porto, illustrates how a maker-oriented, problem-based learning approach can generate clinically relevant assistive technology. Conceived as a complementary tool for the rehabilitation of focal hand dystonia in musicians, NeuroTune integrates a custom keyboard, a metronome, and touch sensors connected to visual and auditory feedback systems – all housed in a laser-cut enclosure and powered by an Arduino microcontroller with wireless connectivity. The device measures the latency between voluntary motor intent and actual key press, generating session reports that enable clinicians to objectively track neuromotor precision over time. Crucially, this same design logic – low-cost IoT hardware, 3D-printed and laser-cut enclosures, open-source firmware, and real-time biofeedback – is directly transferable to devices targeting older adults with focal dystonia, tremor, or motor coordination deficits. The modular architecture allows adaptation to different anatomical needs and daily living contexts. Beyond the device itself, this project demonstrates the pedagogical value of the maker culture in health education. When students prototype real medical devices using Arduino, Tinkercad, and accessible fabrication tools, engagement increases markedly, interdisciplinary collaboration flourishes, and the boundary between classroom and clinical innovation dissolves – producing ideas with genuine potential to improve care for ageing populations.

Virtual Reality and AI for Cognitive and Emotional Well-being in Older Adults

Paulo Veloso Gomes

This talk explores the potential of Virtual Reality (VR) and Artificial Intelligence (AI) to support cognitive and emotional well-being in older adults, within the broader context of digital health innovation. Aging is associated with cognitive changes, particularly in memory, attention, executive function, and emotional regulation, often accompanied by loneliness and social isolation. VR emerges as a powerful experiential tool capable of addressing these challenges through immersive, engaging, and personalized interventions. The presentation examines key neurocognitive mechanisms underlying immersion, including presence, embodiment, and their role in emotional activation and neuroplasticity. It also highlights how VR can be used to foster empathy by simulating age-related sensory and functional decline, supporting better understanding among caregivers and professionals. A central focus is placed on AI-powered adaptive VR systems, which enable real-time personalization of cognitive tasks, adjusting difficulty and feedback based on user performance. These systems support targeted interventions for memory, attention, and executive functions, while also enhancing motivation and engagement. Additionally, the role of VR in promoting social connection is discussed, particularly through shared virtual environments and telepresence, which can help mitigate isolation in older populations. The talk concludes by addressing critical ethical considerations, including accessibility, data protection, informed consent, and safety. Overall, the integration of VR and AI represents a promising, yet complex, approach to enhancing quality of life in aging populations.

Ethical Governance and Data Protection in the European Health Data Space (ECDS): Digital Health, Ageing, and Emerging Inequalities

Henrique Curado

The emergence of a new era in ageing healthcare, marked by increasing digitalization, is redefining how longevity is conceived and experienced. Technologies such as artificial intelligence, wearable devices, telemedicine, and large-scale data analytics promise not only to extend life expectancy but also to enhance its quality, fostering healthy longevity. In this context, the European Health Data Space (EHDS) stands as a central infrastructure, facilitating access to, interoperability of, and reuse of health data, thereby enabling more personalized care, preventive strategies, and greater efficiency in healthcare systems. However, this technological transformation is not without tensions. The intersection of ageing, innovation, and inequality highlights that the benefits of digital health are unevenly distributed, often favoring those with higher levels of literacy and better access to digital resources. Older adults, particularly those in vulnerable contexts, face an increased risk of exclusion, giving rise to new forms of digital health inequality, and are frequently *torn between two types of fear*: the fear of engaging with unfamiliar technologies and the fear of being left behind. At the same time, the growing centrality of data raises important ethical concerns, particularly the risk of reducing individuals to algorithmic representations, thereby undermining the relational and human dimensions of care. Issues surrounding data governance, privacy, and algorithmic bias become especially salient. Finally, health literacy - general, digital, and specifically digital health literacy -emerges as a critical factor shaping equitable access to these innovations. Without strengthening these competencies, the promise of inclusive digital health remains constrained, perpetuating existing inequalities.

Ambient Intelligence: Turning Everyday Objects into Invisible Health Monitors

Hugo Alexandre Ferreira

Healthcare is still largely delivered through episodic encounters and user-dependent devices, placing a significant burden on individuals to initiate, comply with, and sustain self-monitoring behaviors. Ambient Intelligence (AmI) offers a paradigm shift by embedding sensing, computation, and actuation into everyday environments, enabling continuous and unobtrusive assessment of health in real-world settings. This lecture provides a macro-level overview of how off-body, pervasive technologies—ranging from radio-frequency sensing using WiFi signals, to instrumented household objects such as utensils, smart toilets, adaptive living spaces, and sensorized mattresses—can transform the home and daily routines into a distributed health monitoring and intervention system. These systems support the full continuum of care: promoting healthy habits, enabling early detection of disease, tracking progression, assessing treatment response, and providing timely alerts for acute events such as falls. By minimizing user effort and integrating seamlessly into daily life, AmI has the potential to significantly improve adherence, ecological validity of data, and long-term health outcomes, particularly in ageing populations. However, the same invisibility that enables scalability also raises critical ethical challenges. Continuous inference from ambient data blurs traditional notions of privacy, consent, and autonomy, introducing a delicate balance between supportive care and unintended behavioral manipulation. The lecture concludes by framing Ambient Intelligence not only as a technological evolution, but as a socio-technical system requiring careful design of governance, transparency, and human-centered safeguards to ensure that innovation aligns with dignity, trust, and agency.