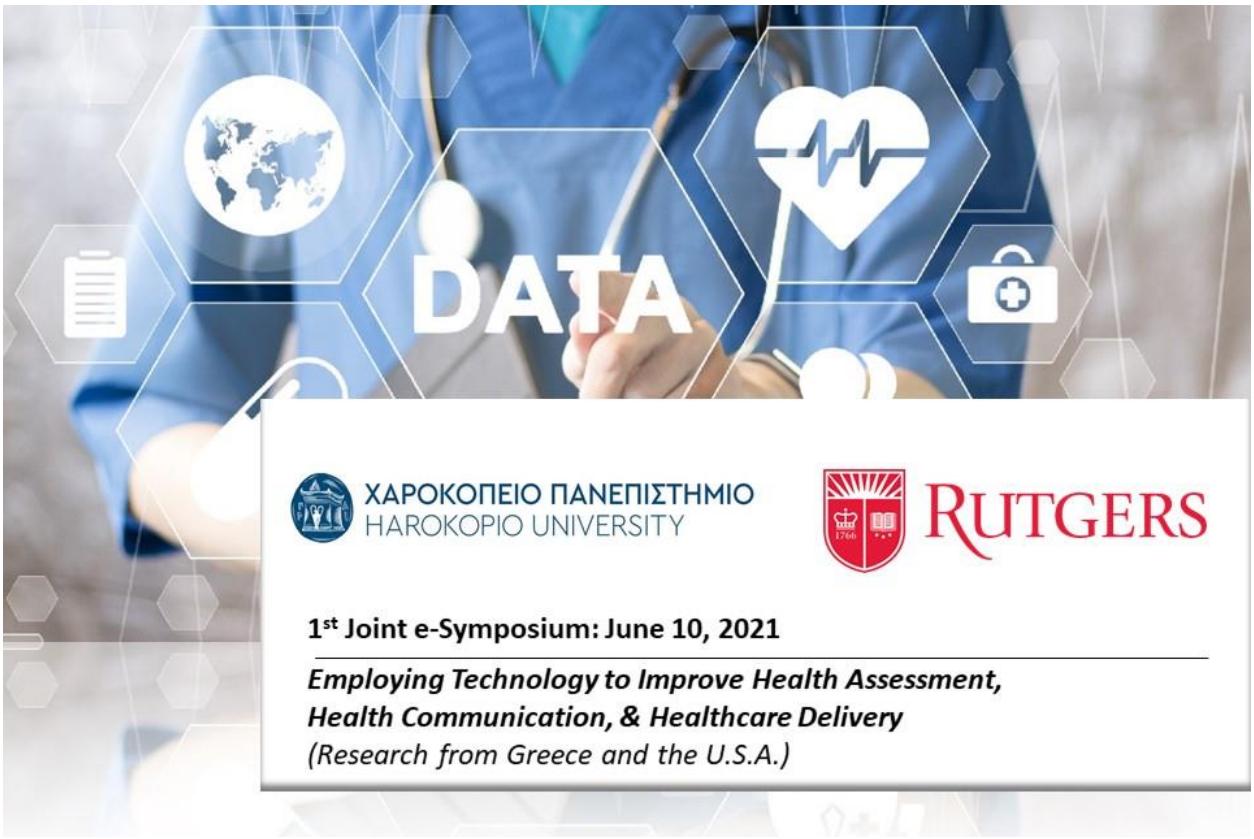

1ST JOINT HAROKOPIO UNIVERSITY & RUTGERS UNIVERSITY e-SYMPOSIUM
Information for Attendees

(Last Update: May 13, 2021)

Employing Technology to Improve Health Assessment,
Health Communication, & Healthcare Delivery:
Research from Greece and the U.S

New communication and information technologies continue to pave the way for innovation in healthcare seeking and delivery, and in health information seeking, processing, and sharing. Technological advancement has also produced new tools that facilitate individuals' efforts to monitor their health, as well as seeking and providing social support to people living with various health conditions. Additionally, today more than even before, researchers, health professionals, community leaders and policymakers are exploring ways to leverage technology in the interest of health promotion and prevention. In combination with the aforementioned trends, the COVID-19 pandemic has raised public awareness around and forced the adoption of telehealth, e-health, and m-health applications and services.

In this first of a series of e-symposia co-organized by Harokopio University (see also: https://www.hua.gr/index.php/en/) and Rutgers University's Schools of Communication and

Information and Health Professions, faculty will share their research regarding the abovementioned issues in Greece and the United States. A reaction panel will kick off a Q&A session and conversation among all attendees.

PUBLIC EVENT AGENDA

Public Event *(Open to all who register in advance; please find registration link below)*

Date: Thursday, June 10, 2021
Time: 9 am – 10:30 am EDT (U.S.) / 4 pm – 5:30 pm (Greece)

Registration: To participate, please register by Monday, June 7, 2021 following the link below: https://www.eventbrite.com/e/1st-joint-e-symposium-employing-technology-to-improve-health-registration-154029800279

- **Introductions and Presentation of the Harokopio University-Rutgers University Partnership**
  Mara Nikolaidou, Ph.D., Rector (Harokopio University)
  Matthew Matsaganis, Ph.D. & Riva Touger-Decker, Ph.D. (Rutgers University)

- **Research Presentations**

  COVID-19 Detection from Chest X-Ray Images Using Deep Learning and Convolutional Neural Networks: Instinct-Driven Research Versus the Reality, and Why Communication Would Help
  Konstantinos Tserpes, Ph.D. (Harokopio University)

  Abstract: The recent pandemic has urged researchers and practitioners alike to make use of their skills and tools to a common cause, cure or mitigate the effects of the SARS-CoV-2 virus. Towards that end, we investigated the option to employ technology in order to assist the diagnosis of patients infected by the virus. As such, several state-of-the-art pre-trained convolutional neural networks were evaluated as of their ability to detect infected patients from chest X-Ray images. A dataset was created as a mix of publicly available X-ray images from patients with confirmed COVID-19 disease, common bacterial pneumonia and healthy individuals. The experimental results demonstrate that the classification performance can reach an accuracy of 95% for the best two models. In our effort to put the results to a good use, we contacted a reference hospital and presented the work to the medical staff to learn some good lessons about the drivers of our research.

  Boosting the Digital Transformation of Healthcare with the Use of Artificial Intelligence (AI) Tools and Methods
  George Dimitrakopoulos, Ph.D. (Harokopio University)

  Abstract: Technological developments in the fields of IoT, ML and AI can provide significant cost savings and lead to improvements in many hospital processes, especially those that require automation, timely responses and informed decision making (e.g. patient monitoring and management in ICU, personalized treatment of severe cases etc.). For the benefit of patients and practitioners, it is necessary to develop platforms that are predictably safe, and allow regulatory reviews to happen quickly, and manufacturers to produce solutions at low cost on a massive scale. AI and digital solutions could also contribute to more effective and automated

work management processes, while offering continuous training for health and care workers. Several such solutions are already employed in small-scale and can be deployed in a large-scale when specific implementation factors are supported. In the light of the above, this presentation seeks to: (a) Promote an effective and efficient health care system transformation, by discussing on the use of IoT, ML and AI technological developments; and (b) Introduce an AI platform that will allow for core facilities to be automated and linked with smart services for healthcare professionals, patients, information system managers, and health organization administrations.

Machine Learning for Objective Behavior Measurement and its Potential in Improving Health Communication
Christos Diou, Ph.D. (Harokopio University)

Abstract: In this talk we discuss how recent advances in machine learning (for processing of signals from wearable sensors) and causal modeling (for handling observational data) can better facilitate communication between patients and clinicians, as well as between researchers/clinicians and health policy makers. We briefly present new methods for obtaining detailed objective measures of eating behavior, including a method for measuring eating behavior from a commercial smartwatch, a method for automatically extracting eating-related indicators from a plate scale and methods for detecting snacking from a chewing sensor. We also discuss how such results can facilitate communication between dietitians and overweight young adults. We then explore how such methods can be applied with off-the-shelf mobile phones and smartwatches for measuring population-level behavioral indicators. Finally, we briefly review how objective behavior measurements and causal models will be used in the REBECCA project to facilitate patient-doctor communication and help develop personalized care strategies for improving the quality of life of breast cancer patients after the primary cancer treatment.

Behavioral Informatics
Vivek Singh, Ph.D. (Rutgers University)

Abstract: The field of Behavioral Informatics focuses on collecting, analyzing, and interpreting heterogeneous data to model human behavior. Through multiple examples of recent projects, we will illustrate how digital data and Artificial Intelligence can be utilized in multiple health and wellbeing related tasks. At the same time, we will discuss some challenges in utilizing such data to model human behavior (e.g., privacy, algorithmic bias) and illustrate early mitigation strategies.

Development and Testing of a Mobile Health Application for Gestational Diabetes
Shristi Rawal, Ph.D. (Rutgers University)

Abstract: Tight glycemic control via diet and lifestyle modification is a critical part of gestational diabetes (GDM) management, but in resource-limited settings like Nepal, time for diet/lifestyle counseling often competes with other components of antenatal care. Mobile health (mHealth) technology can be leveraged to promote healthy behaviors, and support self-management and treatment of GDM, but this approach has not been tried previously in a low-income country setting. Taking a user-centered design approach, we aimed to develop and test a new mobile app that supports self-management and treatment for GDM patients receiving antenatal care in a suburban hospital in Nepal. In the requirements gathering phase, 6 GDM patients were

recruited into a focus group to view paper prototypes and provide feedback on its features and functions. Key informant interviews were conducted with 5 clinicians and 3 family members. Incorporating findings and user feedback from this qualitative study, the app development is currently underway. After the first digital prototype is developed, 6 additional patients with GDM will be recruited for two rounds of usability testing including think-aloud protocol and focus group discussions. Final prototype will be developed following an iterative process of product design and user testing. After the app development phase, we will recruit 60 women who are newly diagnosed with GDM and randomly assign them to either (A) GDM app + standard care, or (B) standard care alone, from 28 weeks of gestation to delivery. In this proof-of-concept trial, feasibility outcomes will be app usage, self-monitoring adherence, and app usability and acceptability. Exploratory treatment outcomes will be glycemic control measures at 6 weeks postpartum, neonatal birthweight, and rates of labor induction and caesarean delivery.

- **Reaction Panel, Q&A, and Discussion**
  A panel of Rutgers University and Harokopio University faculty named below will initiate a Q&A session, during which all audience members will be able to ask questions of the presenters. All participants will be given an opportunity to have a dialogue on the issues raised by the research projects presented and their implications, and to identify top priorities for future research, teaching, professional practice, and policymaking.

  (Reaction Panel members, in alphabetical order)

  Laura Byham-Gray, Ph.D. (Rutgers University)
  Jean-François Daneault, Ph.D. (Rutgers University)
  George Kousiouris, Ph.D. (Harokopio University)
  Shankar Srinivasan, Ph.D. (Rutgers University)
  Iraklis Varlamis, Ph.D. (Harokopio University)

Certificate of Participation

A *certificate of participation* will be provided to all registered participants in the public event who express interest in receiving one. Participants will be able to indicate their interest right after the event, when the organizers will follow-up with them.

A Few Words about IAPP-Greece

IAPP-Greece is an academic incubator program sponsored in 2020 by the Greek Ministry of Education, the U.S. Department of Education, the Institute of International Education, and the Fulbright Foundation, among other organizations, designed to promote international collaboration between U.S. and Greek institutions of higher education. Both Harokopio University and Rutgers University are IAPP-Greece participants.

Brief Bios of Event Participants *(Please find bios later in this document)*

BRIEF BIOS OF EVENT PARTICIPANTS
(In alphabetical order)

George Dimitrakopoulos, Ph.D.
Associate Professor, Harokopio University

Bio: Associate Professor George Dimitrakopoulos (*pronouns:* he, him) has received his bachelor degree in Electrical and Computer Engineering in 2002 and his Ph.D. in 2007, from the National Technical University of Athens, and the University of Piraeus, respectively. Since 2009 he is with the Harokopio University of Athens (HUA), department of Informatics and Telematics. From 2002 till 2009 he was an adjunct lecturer and senior research engineer at the University of Piraeus, department of Digital Systems. He is the author of 3 books, as well as more than 160 publications in international journals and conferences, whereas he has been involved in numerous internationally funded R&D projects. His research interests include the design and development of strategies for the optimization of wireless networks based on cognitive networking principles, as well as the design of Intelligent Transportation Systems (ITS) and novel ICT healthcare applications.

Christos Diou, Ph.D.
Assistant Professor, Harokopio University

Bio: Dr. Christos Diou (*pronouns:* he, him) is an Assistant Professor at the Department of Informatics and Telematics of the Harokopio University of Athens. He received his PhD on semantic analysis of multimedia with machine learning from the Department of Electrical and Computer Engineering, Aristotle University of Thessaloniki, Greece. His research interests lie in the areas of artificial intelligence and machine learning with an emphasis on their health-related applications. He has published 70 papers in international journals and conferences and is co-inventor in one patent. He has worked as a researcher at the Centre for Research and Technology Hellas – Informatics and Telematics Institute for international research projects ASSIST (FP6, STREP), VITALAS (FP6, IP) and CASSANDRA (FP7), as well as in the Aristotle University of Thessaloniki for projects SPLENDID (FP7), eeRIS, CoDeR and BigO (H2020). In most of these projects he has served as a work package leader or as a member of the project coordinating team. He is currently the PI for project REBECCA (H2020) at Harokopio University of Athens, focusing on using Real-World Data and AI for improving the quality of life of breast cancer patients who have undergone the primary cancer treatment.

George Kousiouris, Ph.D.
Assistant Professor, Harokopio University

Bio: Dr. George Kousiouris (*pronouns:* he, him) is an Assistant Professor at the Department of Informatics and Telematics of the Harokopio University of Athens. He received his Dipl. Eng. in Electrical and Computer Engineering from the University of Patras, Greece in 2005 and his Ph.D. in Cloud Computing at the Telecommunications Laboratory of the Dept. of Electrical and Computer Engineering of the National Technical University of Athens in 2012. He has participated in numerous EU funded projects such as H2020 BigDataStack, H2020 CloudPerfect (as lead architect and technical coordinator), H2020 SLALOM, FP7 COSMOS (as lead architect and technical coordinator), FP7 ARTIST (as WP leader), FP7 OPTIMIS (as WP leader), FP7 IRMOS and national projects. He has published over 60 publications on topics including Cloud platforms and architectures, Cloud

services evaluation and benchmarking, Cloud applications design, Service Level Agreements, IoT platforms, Computational Intelligence, Performance engineering and estimation.

Matthew Matsaganis, Ph.D.
Associate Professor, Rutgers University

Bio: Dr. Matthew Matsaganis (*pronouns:* he, him) is an Associate Professor at Rutgers University's School of Communication & Information. His research focuses on the role of communication as a determinant of health disparities in urban communities, but also on how the well-being of neighborhoods can be transformed through communication-centered interventions. In this context, he also investigates how ethnic media can serve critical information needs—including health needs—of immigrant and ethnic communities in the digital age. He is co-author and co-editor of four books, including *Understanding Ethnic Media: Producers, Consumers, and Societies* (SAGE, 2011), *The Communication Ecology of 21st Century Urban Communities (Peter Lang, 2018),* and *Ethnic Media in the Digital Age* (Routledge, 2019). His work has been published in a number of peer-reviewed journals and edited volumes, and funded by U.S. federal agencies, such as the National Institutes of Health (NIH), but also private foundations. Matthew was a Fulbright Foundation Scholar to Greece in 2018, during which time he investigated strategies employed by individuals and families in disadvantaged communities of Athens to weather the ongoing economic crisis and its health-related effects. He has continued to conduct research in Greece since then. His most recent research in Athens has focused on (a) solidarity outpatient clinics («κοινωνικά ιατρεία», in Greek) as critical community-based healthcare resources, as well as (b) a pilot intervention project to improve communication between residents and local social services of a municipality in Western Attica. At Rutgers University, Matthew currently serves as Ph.D. Program Coordinator for the Department of Communication. He is a Core Member of Rutgers' Global Health Institute and serves as a member of the Greek Ministry of Migration and Asylum's Working Group charged with assessing organizational effectiveness.

Shristi Rawal, Ph.D.
Assistant Professor, Rutgers University

Bio: Dr. Shristi Rawal (*pronouns:* she, her) is an Assistant Professor in the Department of Clinical and Preventive Nutrition Sciences at the Rutgers School of Health Professions. Dr. Rawal received her Ph.D. in Public Health from the University of Connecticut and completed a two-year postdoctoral fellowship at the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH. Dr. Rawal's research takes a life-course epidemiological approach to examine the nutritional and biopsychosocial risk factors of cardiometabolic diseases. One line of her research explores how taste and smell perception changes with exposures across the life span (e.g., smoking, viral infections), and act as biological drivers of dietary behaviors and cardiometabolic disease risk. Her research also focuses on pregnancy as a critical life event that influences the short-and long-term cardiometabolic health of women and their children. Primarily, her research emphasis has been on identifying early biomarkers, and dietary and lifestyle determinants of gestational diabetes as well as risk factors for its progression to type 2 diabetes and other cardiometabolic complications such as renal dysfunction. Dr. Rawal is currently a Principal Investigator on two pregnancy cohort studies in Dhulikhel, Nepal and Newark, NJ, respectively. She also serves as a PI on an NIH-funded study that aims to develop and test a mobile health application for self-management and treatment of gestational diabetes among pregnant women in Nepal.

Vivek Singh, Ph.D.
Associate Professor, Rutgers University

Bio: Dr. Vivek Singh (*pronouns:* he, him) is the founding Director of Behavioral Informatics lab and an Associate Professor in the School of Communication and Information at Rutgers University. Before joining Rutgers, he was a post-doctoral researcher the MIT Media Lab. He holds a Ph.D. in Information and Computer Science from the University of California, Irvine. His work has appeared in leading disciplinary and interdisciplinary publication venues (e.g., *Science, Proceedings of the IEEE, JASIST*) and has been covered by popular media (e.g., *The New York Times, BBC, Wall Street Journal*). He was named as one of the "Rising Star" speakers by ACM SIG Multimedia in 2016. Dr Singh's research is supported by the US National Science Foundation and Google.

Shankar Srinivasan, Ph.D.
Associate Professor, Rutgers University

Bio: Dr. Shankar Srinivasan (*pronouns:* he, him) is currently the Interim Chair, Program Director and Associate Professor in the Department of Health Informatics. He graduated with a M.Sc. and a PhD, both in Biomedical Engineering, from the University of Saskatchewan, Saskatoon, Canada in 1988 and 1991 respectively. He has since taught at both undergraduate and graduate level programs in Australia, Singapore and in the Rutgers University's School of Health Professions since 2001. His research interests are mainly in the areas of health outcomes research, data analytics and AI applications. As a Program Director and Chair he is dedicated to ensuring that the Department continues to offer high-quality and value-focused degree programs as also to enhance its global reach and image by setting up articulations with Schools and Programs both here and abroad. He has published in various peer-reviewed journals and international conference proceedings.

Riva Touger-Decker, Ph.D., RD, CDN, FADA
Professor, Rutgers University

Bio: Dr. Touger-Decker (*pronouns*: she, her) is Rutgers' School of Health Professions Associate Dean of Global Affairs, Professor and Chair of the Department of Clinical and Preventive Nutrition Sciences as well as the Director of the Nutrition Division in the Rutgers School of Dental Medicine. She is a registered dietitian, internationally recognized for her expertise and leadership in nutrition and oral health/dental education, and dietetics education and serves on the Rutgers Global Health Institute Executive Committee. Her research has explored diet/nutrition and orofacial pain, tooth loss, and head and neck cancers, worksite wellness, and nutrition focused physical exam practices of dietitians. She has authored multiple peer reviewed publications and has been awarded the American Dietetic Association Medallion and Excellence in Dietetic Education Awards and the American Society for Clinical Nutrition Dannon Institute Award for Excellence in Medical/Dental Nutrition Education. She is a Fellow, New York Academy of Medicine. Previously she has worked with academic institutions in Greece (serving as an expert reviewer for Harokopio University's nutrition and dietetics program), Japan, Israel, Malaysia, and Tanzania to review/develop academic programs and training courses for faculty and students.

Konstantinos Tserpes, Ph.D.
Associate Professor, Harokopio University

Bio: Dr. Konstantinos Tserpes (*pronouns:* he, him) is an Associate Professor at the Department of Informatics and Telematics of the Harokopio University of Athens. He holds a PhD in the area of Distributed Systems from the school of Electrical and Computer Engineering of the National Technical University of Athens (2008). His research work mainly revolves around software and service engineering, cloud and edge computing and machine learning applications. He has been involved in several EU and National funded projects dealing with challenges related to scalability, interoperability, fault tolerance, and extensibility in application domains such as multimedia, e-governance, post-production, finance, e-health and others. He has served as the scientific or general coordinator in several ICT projects such as +Spaces, SocIoS, Consensus, Fortissimo (FP7) and BASMATI (H2020). He is the principal investigator for the ongoing projects TEACHING, ACCORDION, COLLABS, CHARITY, GLASSEAS, MASTER and SmartShip (H2020). In these projects, his role typically involves the coordination of software development teams and acting as the chief software architect. In this capacity he has also developed numerous mobile and web apps.

Iraklis Varlamis, Ph.D.
Associate Professor, Harokopio University

Bio: Dr. Iraklis Varlamis (*pronouns:* he, him) is an Associate Professor at the Department of Informatics and Telematics of Harokopio University of Athens. He received his PhD in Computer Science from Athens University of Economics and Business, Greece, and his MSc in Information Systems Engineering from UMIST UK. His research interests vary from data-mining and the use of semantics in web mining to social network analytics and knowledge extraction from social media and the news. He has published more than 170 articles in international journals and conferences, concerning web document clustering, the use of semantics in web link analysis and web usage mining, recommender systems, etc. He has also co-ordinated several national R&D projects concerning data management and personalized delivery of information. He holds a patent from the Greek Patent Office for a system that thematically groups web documents using content and links. More information is available at http://www.dit.hua.gr/varlamis