Exploring the Integration of Digital Twin and

in Higher Education

Mixed Reality Technologies: A Multidisciplinary Approach

6.-7. February 2024 **Rethymno, Greece**

Olympic Palladium Hotel, Conference Hall, Rethymno City Address:42, Themistokli Moatsou str. 74100 Rethymno - Crete - Greece

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11 70 10 70		12.30-14.00	Lunch
11.30-12.30	Emilia Karova & Magdalena Kasnakova MUS' e-Learning: Innovative Approaches to Teaching and Learning in the Digital Age: Simulation-based education	14.00-15.00	Marcus Nohlberg Teaching the Dark Art of Deception: A Workshop on Pedagogical and Ethical Challenges when Students
12.30-14.00	Lunch		Roleplay as Attackers
14.00-15.00	Mary Moloney & Jeremiah Spillane Virtual Site Visits: The use of immersive and accessible technologies in the teaching of Civil Engineering	15.00-16.00	Enrique Meléndez Galán Applying Board Games to Achieve Competences in Humanities: The Cases of Timeline and Time´s Up
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9.00-9.15

Opening Speech

Kallia Katsampoxaki-Hodgetts, Dr.
Coordinator of Teaching and Learning Centre TotT
Lecturer of Multiliteracies and Multimodality Teaching Approaches course for pre-service teachers
Academic English and Technical Writing Instructor

What do we mean by innovation in Higher Education?

Abstract. Ingenium, as a coalition of ten European Universities dedicated to inclusion and student-centred pedagogies, recognises the profound impact of social, political, and economic challenges on education and research. Educators and researchers have been steadfast in adapting to societal changes, exemplified by the recent economic crises, global pandemics, and conflicts. Amidst these complexities, Ingenium aspires to lead developments in educational research and practice, reflecting our commitment to societal improvement.

The Academic Staff Week provides an opportunity to reflect on achievements, explore key issues, and collectively address challenges in educational research. Delving into the multifaceted realm of innovation in Higher Education and Pedagogy, it is imperative to realise that innovation is a shared responsibility. It involves reimagining approaches beyond technology, embracing inclusivity, and fostering active learning methodologies. The Ingenium alliance supports this through collaborative efforts and institutional commitment. Innovation is continuous, requiring adaptability and openness to exploration, hopefully shaping an inclusive and resilient future.

Keywords. Innovation, inclusion, reflection, responsibility, adaptability.





Contact information

Kallia Katsampoxaki-Hodgetts

katsampoxaki@uoc.gr Tel. (0030) 2810 545102

Orcid: https://orcid.org/0000-0002-1143-3050 LinkedIn: linkedin.com/in/dr-kallia-katsampoxaki-

hodgetts-6454929b

Google Scholar: https://scholar.google.com/cita-

tions?user=Eh3rlcQAAAAJ3050

University of Crete, Greece





9.15-10.15

Laurent Delbreith

Associate Professor, University of Rouen Normandy

Interest of 3D printing for creating pedagogical tools for pediatric surgery

Abstract. Surgical training is a lengthy and challenging endeavor. Since 2017, there has been a legal requirement in France for simulation-based training. However, simulators are often too expensive or inaccessible in major surgical training centers. To address this issue, we have developed a training program using pedagogical models entirely print-ed in 3D for all surgical residents. 3D printing allows for the creation of cost-effective, high-quality models with readily available materials. Currently, 17 University Hospitals in France boast a 3D printing platform.

Our goal is to freely share our models, which have been tested and validated in Rouen, across these platforms and potentially worldwide. This initiative not only democratizes access to advanced surgical training but also fosters a collaborative environment for continual learning and improvement in the medical field.



Contact information

Laurent Delbreith

laurent.delbreilh@univ-rouen.fr
Orcid: https://orcid.org/0000-0002-9322-7153
LinkedIn: www.linkedin.com/in/laurent-daab745106

University of Rouen Normandy, France







Tuesday 6 10.30-11.30

Salla Vaahersalo, Senior Lecturer & Petteri Oinas, Senior Lecturer South-Eastern Finland University of Applied Sciences

Serious Games

Abstract. Our presentation is about Serious games and, more accurately, game-based learning teaching methods.

We will give a short 10-minute introduction to the subject, explaining what we have done and how the students have found it.

After that, we will demonstrate our subject through a short game in which other participants can participate. Our game is called The Dot Game. We will make two teams to add a little competition to it. The Dot Game is a lean game where the teams "manufacture" post-its that contain different colored dots. There are eight roles in each team, so all together, we need 16 participants, and the other participants can observe. We will play two rounds, the first to demonstrate batch production and the other round to demonstrate one-piece flow. The point of the game is to show how easily the wanted concepts and KPI's can be made concrete.





Contact information

Salla Vaahersalo

salla.vaahersalo@xamk.fi

LinkedIn: http://www.linkedin.com/in/salla-vaaher-

salo-607bb7213



Petteri Oinas

petteri.oinas@xamk.fi

LinkedIn: https://www.linkedin.com/in/petteri-

oinas-834bb832/

South-Eastern Finland University of Applied Sciences





11.30-12.30

Emilia Karova, Prof., Dr. & Magdalena Kasnakova, Senior Expert, PhD *Medical University of Sofia*

MUS' e-Learning: Innovative Approaches to Teaching and Learning in the Digital Age: Simulation-based education

Abstract. The new digital age simulation techniques are transforming the field of dental education at MUS. The transition of the learning process from a traditional model-based technique to entering clinical practice has been smoothed with the help of the new age simulation methods (incl. simulation activities, role play, part-task trainers, and immersive simulation). The reforms in the dental curriculum to incorporate simulation-based learning techniques aim to establish a pre-clinical skill set for students along with the equipment of university teaching spaces and laboratories with the latest simulation centers and mannequins. The Faculty of Dental Medicine at MUS offers modern dental education by combining case studies with real clinical data – using simulation units. Installed in 2023, the faculty staff is proud to have Bulgaria's most modern simulation center.

The workshop will consist of a first part PowerPoint Presentation within 25 minutes, a 10-minute multimedia presentation with photo and video material with author's footage from the MUS, as well as a 5-minute physical on-site involvement of the Bulgarian doctoral student from the Faculty of Dental Medicine, Evgeniy Stanev, who takes part in parallel Senior Winter School.







Contact information

Emilia Karova

e.karova@fdm.mu-sofia.bg

Orcid: https://orcid.org/0000-0002-8630-0332



Magdalena Kasnakova

m.kasnakova@mu-sofia.bg +359 2 9152138 +359 88 5025943

LinkedIn: https://www.linkedin.com/in/magdalena-kasnakova-7055b0102/?originalSubdomain=bg

www.mu-sofia.bg

Medical University of Sofia, Bulgaria



12.30-14.00

Mary Moloney, Dr., Lecturer, researcher & Jeremiah Spillane, Dr. Munster Technological University

Virtual Site Visits: The use of immersive and accessible technologies in the teaching of Civil Engineering

Abstract. This showcase/demonstration illustrates how the use of immersive 360-degree video and photographs, viewed in virtual reality headsets or via 360 degree media players, can enhance and broaden the student experience when undertaking Project Based Learning (PBL) assignments. The demonstration will include an array of mediums in which a Virtual Site Visit (VSV) can be shared with students. By using coverage of real buildings, PBL assignments can be set for students which are real and innovative. This pedagogical approach could allow educators to use particularly interesting or challenging buildings / case studies, once a VSV has been generated. This is particularly useful for students who may have accessibility issues, for experiencing interesting structures from around the world in a much more meaningful way, or for distance/online learning.





Contact information

Mary Moloney

Mary.Moloney@mtu.ie

LinkedIn: linkedin.com/in/mary-moloney-eng



Jeremiah Spillane

Jeremiah.Spillane@mtu.ie

LinkedIn: linkedin.com/in/jeremiah-spillane-9b508a18

Munster Technological University, Ireland





Tuesday 6 15.00-16.00

Cătălin Dosoftei, Associate Professor & Gabriel Florentin Chiriac, Teaching Assistant Gheorghe Asachi Technical University of Iasi

Exploring the Integration of Digital Twin and Mixed Reality Technologies: A Multidisciplinary Approach in Higher Education

Abstract. Join us to experience educational innovation at its best in our workshop on Digital Twin and Mixed Reality technologies. Successfully implemented in the Pneumatic Drives Laboratory at the Department of Automatic Control and Applied Informatics, TUIASI, this method has garnered enthusiastic feedback from students. The use of Microsoft Hololens 2, a state-of-the-art Head-Mounted Display, creates a learning environment that is both immersive and interactive. Rooted in gaming technology, which inherently appeals to the digital native generation, this approach makes learning complex concepts not just educational but also highly engaging and enjoyable.

Our session showcases how these advanced technologies enhance educational experiences, align with the digital preferences of students, and prepare them for the evolving demands of various industries. Discover how we are bridging the gap between theory and practice, making education more dynamic, engaging, and in tune with today's technological advancements. Embrace this unique opportunity to explore the intersection of cutting-edge technology and education, gaining valuable insights and skills that are important in a rapidly advancing digital world.







Contact information

Cătălin Dosoftei

constantin-catalin.dosoftei@academic.tuiasi.ro +40 723315764

Orcid: https://orcid.org/0000-0001-6095-3944 LinkedIn: https://www.linkedin.com/in-/c%C4%83t%C4%83lin-dosoftei-a7a0a2aa/

Gabriel-Florentin Chiriac

gabriel-florentin.chiriac@academic.tuiasi.ro +40 740666402

LinkedIn: http://linkedin.com/in/gabriel-florentin-chiriac-b90361201

Gheorghe Asachi Technical University of Iasi, Romania







9.00-10.00

Patrick Brecht
Research and Lecturer, Karlsruhe University of Applied Sciences

The Live-Lab: KaPIL - Karlsruhe Platform Innovation Lab

Abstract. The list of the most successful companies, such as Google, Amazon, Facebook, Alibaba, and Apple, follows a similar business logic: they have a digital background in their business models. As these platform business models differ radically from traditional pipeline business models, they pose new challenges for initiators and the entire economy. In the workshop, the establishment of the Live Lab KaPIL – Karlsruher Platform Innovation Lab will be explained.

The Live Lab KaPIL utilizes the Massive Open Online Course (MOOC) "Platform Strategy for Business" by Prof. Marshall van Alstyne on edX.org. Students first become theoretical platform experts, and then they learn the application of theoretical knowledge through a real-world problem. As a result of the event, various platform business models will be presented for and in front of the partner companies at the end of the semester. Workshop participants in Crete will learn how to adapt KaPIL and implement it at their university.



Contact information

Patrick Brecht

patrick.brecht@xlab.center

LinkedIn: https://www.linkedin.com/in/patrick-

brecht-741b1a94/

Karlsruhe University of Applied Sciences, Germany









10.30-11.30

Massimo Angrilli, Full professor in Urbanism & Valentina Ciuffreda, PhD candidate in Urbanism

Cities of the World

Abstract. Join our interactive workshop, where we'll embark on a journey starting with the narration of an educational experience, consisting of a series of lectures focused on the cities of the world, featuring active collaboration from course students. The workshop unfolds into a collaborative endeavor culminating in the creation of a Participatory Atlas focusing on the 10 cities that form the network of INGENIUM European University.

Participants, including researchers from the 10 affiliated universities, will collaboratively piece together this Atlas like a dynamic mosaic, a work in progress. This Atlas aims to serve as a valuable resource for future students of the European University, providing insights into the diverse urban landscapes within the INGENIUM network. In this session, collective knowledge and experiences weave together to create a comprehensive and dynamic exploration of the urban environments shaping our educational and research horizons.





Contact information

Massimo Angrilli

massimo.angrilli@unich.it +39 335 6660818

Orcid: orcid.org/0000-0001-5118-0417

LinkedIn: www.linkedin.com/in/massimo-

angrilli-0483a432/

Valentina Ciuffreda

arch.valenMnaciuffreda@gmail.com +39 345 8460650

Orcid: orcid.org/0009-0003-7483-1464 LinkedIn: www.linkedin.com/in/valenGna-

ciuffreda-84526315a

Università degli Studi "G. d'Annunzio" Chieti – Pescara, Italy







11.30-12.30

Stylianos Ioannis Tzagkarakis, Dr. Field Manager of the Centre for Political Research and Documentation, University of Crete

Experiential learning of EU through simulation as a tool for European citizenship and democratic values awareness

Abstract. Higher education is a significant field for fostering citizenship and promoting active democratic engagement. Within this framework, academic learning is viewed as a social endeavor that provides opportunities to strengthen social cohesion, comprehend the functions of democratic institutions, and equip students for active civic participation. Grounded in these principles, this workshop seeks to engage participants with an unconventional experiential learning method in higher education, particularly within institutional learning contexts.

The workshop will focus on constructing and pilot testing a simulation activity of the European Parliament in order to gauge the significance of this alternative-experiential learning method in promoting active citizenship and learning the functions and importance of this democratic institution through active participation in simulating a part of the plenary legislative procedure. Thus, this workshop aims to assess the impact of such learning methods on students' understanding of institutions as well as their awareness of democratic principles.



Contact information

Stylianos Ioannis Tzagkarakis

stsagarak@uoc.gr, sttvaz@yahoo.gr

Orcid: https://orcid.org/0000-0002-9393-8991 LinkedIn: https://www.linkedin.com/in/stylianos-

ioannis-tzagkarakis-28906b9a/

University of Crete, Greece







14.00-15.00

Marcus Nohlberg *Associate Professor, University of Skövde*

Teaching the Dark Art of Deception: A Workshop on Pedagogical and Ethical Challenges when Students Roleplay as Attackers

Abstract. Social engineering is a manipulation tactic by attackers to gain sensitive information or disrupt security through deception, targeting human vulnerabilities rather than technological flaws. It is a significant cybersecurity threat due to its use of psychological manipulation, pretexting, phishing, and other deceptive strategies. This technique is the focus of this workshop, which blends ethical discussions with practical activities for a holistic educational approach.

Educators attending the session will experience a lesson that incorporates both offensive and defensive cybersecurity skills. They'll explore the attacker's mindset, encourage ethical reflection, manage competition in learning environments, and balance the intrigue of hacking with responsible knowledge application. Teaching students to think like attackers yet respect ethical limits is emphasized, along with the necessity of debriefing to solidify learning outcomes and ensure knowledge is used ethically.



Contact information

Marcus Nohlberg

marcus.nohlberg@his.se +46 500 44 82 70

Orcid: https://orcid.org/0000-0001-5962-9995 LinkedIn: https://www.linkedin.com/in/nohlberg/

University of Skövde, Sweden







15.00-16.00

Enrique Meléndez Galán Assistant Professor, Universidad de Oviedo

Applying Board Games to Achieve Competences in Humanities: The Cases of Timeline and Time's Up

Abstract. Our innovative project is based on integrating board games into the realm of art and humanities. Through the adaptation of the mechanics of the games "Time's Up" and "Timeline," participants engage in a dynamic game-based learning experience. The games, featuring cards depicting historical events, characters, artworks, and literary creations, is designed to enhance critical thinking and collaboration. On this way, it will be important not only the knowledge about a topic, but also, blending verbal description, concise clues, and even mimicry in a funny activity designed to teach and learn meanwhile we play.



Contact information

Enrique Meléndez Galán

melendezenrique@uniovi.es

Orcid: https://orcid.org/0000-0001-9382-0304 LinkedIn: linkedin.com/in/enrique-meléndez-

galán-2181ba15b

Universidad de Oviedo, Spain





