VIII CULTURAL HERITAGE SEMINAR

ARTIFICIAL INTELLIGENCE APPLIED TO CULTURAL HERITAGE

Generalitat de Catalunya

LA PEDRERA
17 D'OCTUBRE DE 2024

We live in a world that is increasingly surrounded by new tools designed to make our work easier. ICTs can be found in our daily lives and artificial intelligence (AI) is a reality. Whether we are aware of it or not, AI is already part of our present and is the order of the day in all academic disciplines and professional fields. The culture and management of cultural heritage is not inherent to this reality. Everyone is talking about AI, and we have already timidly started to experiment with it. Have we ever asked ourselves: how can we use AI tools in the field of cultural heritage?

Many publications, studies and experiences around this phenomenon have appeared in a short period of time. AI is a tool that is growing exponentially and whose limits we do not yet know. It can help us to improve conservation techniques and diagnosis, increase the identification of objects and categories, monitor databases, contextualise heritage elements, create artistic works for different uses, obtain tools to increase accessibility and resources for a variety of audiences, or create new experiences for visitors.

Do we really know what we can do with AI in our facilities? The VIII Cultural Heritage Seminar will provide us with an understanding of what artificial intelligence is and its potential, while helping us to learn about various experiences today at national and international levels regarding the possible uses of AI in the culture and management of cultural heritage in Catalonia.

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MATÍ

8.45 – 9.15 h

REGISTRATION

Video - LUX MUNDI

9.15 – 9.30 h

INSTITUTIONAL WELCOME

9.30 – 10.15 h

CULTURAL HERITAGE AND AI: HOW NOT TO LOSE FOCUS AT A TIME OF ACCELERATED CHANGE

Karma Peiró, journalist specialising in Information and Communication Technologies

This talk will examine what artificial intelligence is and what is not, as well as the transformative potential it can imply for cultural heritage. Over a very short period of time, this technology has shown us not only its friendliest side, but also its darkest. The session will serve to reflect critically on what are the best choices to make when attempting to apply AI, as well as the challenges it poses to us in the coming years.

10.15 – 10.20 h

QUESTION TIME

10.20 – 10.50 h

COFFEE BREAK (Sala Gaudí))

10.50 – 11.20 h

ARTIFICIAL INTELLIGENCE IN INTERPRETING HISTORICAL ARCHIVAL SOURCES: AVOIDING MISINFORMATION WHEN ALGORITHMS USE RELIABLE DATA

Josep Lladós Canet, Director of the Computer Vision Centre

The digital twin industry is based on generating virtual replicas of physical entities. It has been used in the Regional Archives Network of Catalonia to recreate documentary heritage. Thanks to reliable data stored in regional archives, the use of artificial intelligence allows these replicas to be created, avoiding the generation of unreliable or unverified knowledge. In collaboration with the Regional Archives Network, the Computer Vision Centre is working on new technological tools to bring documentary heritage closer to the public, making it more accessible and attractive.

11.20 – 11.25 h

QUESTION TIME

11.25 – 11.55 h

MEMÒRIES SINTÈTIQUES. TRANSFORMAR UNA INSTITUCIÓ CULTURAL EN UN ESPAI D'INNOVACIÓ CIUTADANA.

Airí Dordás i Axel Gasulla, members of Domestic Data Streamers

Technology is becoming increasingly present in the cultural world. At Domestic Data Streamers, we have integrated technology and data in many different formats. Artificial intelligence presents us with new challenges and opportunities that can help us to transform cultural spaces and museums into places where conversations are generated. In this way, not only are the ideas of the creators

taken into account, but visitors are also given a voice and their opinions become an important part of cultural heritage.

11.55 – 12.00 h

QUESTION TIME

12.00 – 12.30 h

ARTIFICIAL INTELLIGENCE AND CULTURAL HERITAGE: CURRENT APPLICATIONS AND FUTURE PERSPECTIVES

Hèctor A. Orengo, ICREA Research Professor at the Barcelona Supercomputing Centre

The past seven years have seen an exponential increase in studies dedicated to the application of methods from the field of artificial intelligence, especially so-called machine and deep learning, to identify, study and protect cultural heritage.

This presentation will explain how these types of algorithms work, examining the advantages and problems of their application to cultural heritage through practical examples.

12.30 - 12.35 h

QUESTION TIME

12.35 – 13.05 h

IMPOSSIBLE IDEAS, FEASIBLE PROJECTS

Pep Casals, co-founder of Nubilum & Coeli Platform

How can we turn *a priori* impossible ideas into real projects? This presentation uses a set of practical cases to explore the strategies to meet the needs and increase the efficiency of teams in the heritage sector, highlighting how the implementation of artificial intelligence (AI) tools facilitates these successes and emphasising the application of professional judgement.

13.05 – 13.10 h

QUESTION TIME

13.10 – 15.00 h

LUNCH BREAK (free time)

TARDA

15.00 – 15.20 h

THROUGH THE MIRROR: AN ANALYSIS OF THE HERITAGE CONTENT CREATED BY GENAI

Xavier Rubio Campillo, Ramón y Cajal researcher at the Universitat de Barcelona and Director of the DIDPATRI (Didactics and Heritage) research group

Generative AI (GenAI) applications related to cultural heritage are becoming increasingly popular. Consulting information on historical facts, personalised itineraries for museum visits or the visual recreation of the past are just some of their current applications, but what heritage is reflected by these tools and how can we analyse the biases they generate? The preliminary results of a study to assess the dynamics of GenAI use in the context of cultural heritage will be presented in this talk.

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15.20 – 15.40 h

USE OF GENERATIVE AI IN PUBLIC ADMINISTRATIONS: AUDIO GUIDES

J. Ignasi Bonet, innovation facilitator at CTTI

Generative AI has recently reached the whole of society. Initial tests have raised great expectations. Given that the results are apparently spectacular, an inevitable question arises: how can I use these tools? But they need to be tested before they can be used in public services.

One notable test that has been carried out is that of the automatic generation of audio guides. The aim is to evaluate the feasibility of an automatic solution that generates versions by language or audience, as well as generating the narration, in order to streamline the creation of audio guides at an affordable cost.

15.40 – 16.00 h

SMALL DATA, BIG MODELS AND THE REWARDS OF REASONING

Maria Cristina Marinescu, Professor at IQS and researcher in the field of Semantic Technologies and Artificial Intelligence at the National Supercomputing Centre

Areas that do not have a lot of data by AI standards, as is the case with cultural heritage, have generally been left out of the main guidelines for applied research. With the advent of large language models, a powerful tool for text generation has become available to everyone, such as for image descriptions. Do these models make other efforts to provide high quality metadata for cultural heritage images obsolete, or are there tasks where they can still be improved? What alternatives can complement the statistical approach on which these models are based for small data domains? We will illustrate our view in this regard through the lessons learned during our European project: Saint George on a Bike.

16.00 – 16.20 h

DIDACTIC ICONOGRAPHY IN HISTORY AND GENERATIVE AI

Francesc Xavier Hernàndez, Professor of Social Science Teaching at the Universitat de Barcelona

Iconography is a key resource for approaching past in a comprehensive manner. The use of Computed-Generated Imagery (CGI) has made it possible to obtain images of high quality and at reasonable cost (3D, matte painting...). Generative AI now offers interesting additions to provide views of the past.

16.20 – 16.30 h

QUESTION TIME

16.30

CONCLUSION

Amb la col·laboració:

Fundació Catalunya La Pedrera

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KARMA PEIRÓ

Journalist who has been specialising in Information and Communication Technologies (ICTs) since 1995. Executive Director of the Visualisation for Transparency Foundation (ViT), which promotes the use of open data to empower citizens and public information accountability. Co-author of the report "Artificial Intelligence. Automated Decisions in Catalonia" by the Catalan Data Protection Authority (APDCat) (2020). Member of the Ethics Committee of the Universitat Politècnica de Catalunya; member of the Advisory Board of the project Empowering Communities: Public Libraries, Inclusive Civic Engagement and Artificial Intelligence; of the Centre for Government and Technology at the University of Albany; of the Advisory Board of Oxfam Intermón in the Global Digital Justice programme; and of Algorights, a collaborative network promoting human rights in the field of artificial intelligence.

JOSEP LLADÓS CANET

Dr Josep Lladós Canet graduated in Computer Engineering from the Universitat Politècnica de Catalunya in 1991 and obtained a PhD in Computer Science from the Universitat Autònoma de Barcelona (UAB) and the University of Paris 8 (France) in 1997. He is currently a UAB Professor and Director of the Computer Vision Centre (CVC). Within the realm of computer vision, Dr Lladós specialises in document image recognition. He has made various contributions in this area to the field of digital humanities, in tools for reading digitised historical documents. He has led several R&D projects, published around 300 papers in various international congresses and journals, and supervised 17 PhD theses. Dr Lladós has been a member of the commissions that have defined the artificial intelligence strategies for Spain and Catalonia.

AIRÍ DORDÀS PERPINYÀ

Airí Dordàs is a designer specialising in communication and social innovation. Her career has focused on leading projects that seek to influence changes in mentality and behaviour in order to promote a fairer society. With more than 13 years of experience, she currently leads the Synthetic Memories project at Domestic Data Streamers, where she explores the intersection between data, AI, narrative, memory and the defence of social rights.

AXEL GASULLA ROGLÀ

With a Degree in Psychology and Master in Management and Human Resources, Axel Gasulla is the co-founder of several initiatives such as Domestic Data Streamers, CEDRA, 16TIMES and Åkerblom Studio. He currently co-leads Domestic Data Streamers as General Manager, where he integrates knowledge of cognitive and social psychology into the design of spaces in order to create meaningful experiences by combining data and emotion. He works on innovative communication projects alongside a multidisciplinary team.

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HÈCTOR A. ORENGO
An ICREA Research Professor at the Barcelona Supercomputing Centre, where he leads the Computational Archaeology team, and at the Catalan Institute of Classical Archaeology, where he co-leads the Landscape Archaeology research group.
His work focuses on studying the interactions between past societies and their environment using computational tools such as GIS, remote sensing, predictive modelling and machine learning.

PEP CASALS
A Technical Engineer in Information Technology from the Universitat Rovira i Virgili with a postgraduate degree in Information Systems Management. He has more than 25 years of experience in consulting and running knowledge management projects. Since 2013, he has worked at Nubilum in the strategic approach to solutions and since 2017 at Coeli, the software for managing cultural heritage collections for cataloguing, management and online dissemination. His solid combination of technical and business skills helps him to lead projects with a global vision and a clear customer focus.

XAVIER RUBIO CAMPILLO
A Ramón y Cajal researcher at the University of Barcelona, where he directs the DIDPATRI (Didactics and Heritage) research group. His research explores the application of digital technologies to the study, communication and teaching of the past through cultural heritage.

J. IGNASI BONET
He has been an innovation facilitator at the CTTI's Digital Innovation Directorate since July 2022, as part of the GovTech_Catalunya strategy. CTTI's vision is to evolve towards a service model focused on accompanying innovation and digital transformation. Its value proposition has been strengthened in recent years to respond to the new needs related to the disruptive changes caused by the digital revolution.

MARIA CRISTINA MARINESCU
Professor at IQS and researcher in the field of Semantic Technologies and Artificial Intelligence at the National Supercomputing Centre (BSC-CNS), where she has led national and international projects applying this technology to smart cities, social exclusion and poverty, and cultural heritage. Coordinator of the recently completed European project Saint George on a Bike, which seeks to use AI techniques to automate the understanding of the visual content of paintings from the 12th to the 18th centuries, the results of which will be used as part of a collaboration with the Prado Museum.

FRANCESC XAVIER HERNÀNDEZ CARDONA
PhD in Contemporary History. Professor of Social Science Teaching at the Universitat de Barcelona. Narcís Monturiol Medal for Scientific and Technological Merit. Coordinator of the Historical-Museographic Project of the Museum of the History of Catalonia. He works in the field of didactic iconography applied to museography.