

Preface

The main aim of the Eleventh International Conference *Digital Presentation and Preservation of Cultural and Scientific Heritage (DiPP2021)* is to bring together as many interested institutions as possible working on digitising, recording, documenting, archiving, presenting, protecting and managing cultural and scientific heritage, so that they can share their advanced thoughts, know-how and experience. Public and specialised libraries, museums, galleries, archives, community centres, research institutions and universities are expected to share and acquire knowledge, skills, and expertise at the event.

Four types of papers are presented – invited papers, full papers, short papers, and project papers. The first three types discuss current scientific results, trends and achievements in the field of digital preservation and presentation of cultural and scientific heritage. The project papers present developments in progress, part of them experimental, made by memory institutions during their institutional projects.

- *Invited papers*

The paper by Michael E. Farmer proposes an approach for the integration of the Dempster-Shafer theory with an estimation structure based on Kalman filtering and its applications to Wide-area Sensor Networks.

The paper by Alexander I. Iliev explores the current expectations towards Artificial Intelligence and how they relate to the trustworthiness, acceptance and adoption of AI.

The paper by Yanislav Zhelev, Mariya Monova-Zheleva and Radovesta Stewart presents European Commission initiatives aiming to strengthen European identity creation, with a focus on the strategic framework for the EU's cultural policy.

The paper by Radovesta Stewart, Yanislav Zhelev and Mariya Monova-Zheleva gives overview of the DigiCult project, that aims to develop an extended model that fits the process of ICH digitalization Europe wide.

The paper by Marco Scarpa, Constanta Burlacu and Desislava Paneva-Marinova outlines the objectives of the Fourteenth Century South Slavonic Scribes and Scriptoria project and the introduction of digital palaeography to the field of Slavonic Studies.

- *Full papers*

The paper by Sebiha Madanska, Sheban Bilyanov, Asya Stoyanova-Doycheva and Stanimir Stoyanov presents an ontological approach to old Bulgarian Revival architecture.

Jordan Stoikov's paper introduces a method for extracting information from cultural heritage data sources using word embedding with feature extraction and structured representation.

The paper by Maria Teresa Artese and Isabella Gagliardi discusses machine learning and deep learning tools for addressing noisy keyword issues in digital libraries.

The paper by Oleg Iliev and Radoslav Yoshinov designs a model for creating heritage content, composed as a combination of multiple components, using a component-based software architecture.

The paper by Desislava Paneva-Marinova, Maxim Goynov, Detelin Luchev and Lubomir Zlatkov describes the presentation layer of a virtual museum for cultural heritage artefacts.

The paper by Maria Teresa Artese and Isabella Gagliardi outlines the design of ICH Discovery – an intangible heritage extension of the QueryLab platform.

The paper by Evita Pilege, Sandra Plota, Girts Pilegis and Marga Zivitere discusses the impact of information technology on socio-economic, cultural processes and the need for a balanced digital transformation.

The paper by Evgeniya Nikolova, Yanislav Zhelev and Mariya Monova-Zheleva proposes an approach for improving the knowledge and competencies of cultural professionals in cultural heritage digitalization.

The paper by Nektarios Moumoutzis, Nikos Pappas, Chara Xanthaki, Stelios Perrakis, Yiannis Maragkoudakis, Stavros Christodoulakis and Desislava Paneva-Marinova presents the extension of the multimedia system Coursevo with gamification facilities for game-based learning scenarios.

The paper by Zsolt László Márkus, Tibor Szkaliczki, György Szántó, Miklós Veres, Zsolt Weisz, László Molnár and László Csaba Szarka discusses the assistance the digital tools could provide to the organizers of educational competitions.

The paper by Nektarios Moumoutzis, Chara Xanthaki, Stelios Perrakis, Manousos Manousakas and Lilia Pavlova presents the design, implementation and evaluation of a training programme for Computer Science teachers on the educational use of the Python programming language.

The paper by Magdalena Stoyanova, Margarita Krylova and Lilia Pavlova describes a virtual reconstruction of the S. Maria Assunta cathedral in Torcello, Venice, Italy.

The paper by Ankitha Raksha, Raghul Krishna Rajasekaran, Praveen Francis, Suhas Yogeshwara and Alexander I. Iliev focuses on algorithms for detecting hand gestures for the operations of electrical home equipment.

The paper by Ivan Derzhanski and Olena Siruk presents a culturological comparative study on lexicographic sources in several closely related languages and the associations related to the use of the words for 'bread'.

The paper by Emanouil Atanassov, Aneta Karaivanova, Sofiya Ivanovska and Mariya Durchova explores Monte Carlo algorithms for faster discovery of hyperparameters and training of Support Vector Machines.

- *Short papers*

The paper by Silvi-Maria Gurova, Aneta Karaivanova presents theoretical results on estimation of the condition number with application in image restoration problems.

The paper by Emanuela Mitreva, Alexandra Nikolova, and Vladimir Georgiev discusses web mining techniques applicable for cultural heritage observations.

Orlin Kouzov's paper presents a research on the cultural aspects of the influence of Artificial Intelligence on the development of the economy.

The paper by Vladimir Georgiev and Aleksandra Nikolova describes several interactive and immersive tools for presenting cultural-historic content to children for supplementary learning purposes.

The paper by Stefka Kovacheva and Ludmila Dimitrova describes a methodological framework for designing a web-based application for presentation of integrated knowledge about cultural heritage sites.

- *Project papers*

The paper by Detelin Luchev, Maxim Goynov, Desislava Paneva-Marinova, Jordan Stoykov, and Lilia Pavlova presents the specification of the humanities and social sciences data storage, retrieval and curation environment developed within the Bulgarian National Interdisciplinary Research E-infrastructure for Bulgarian Language and Cultural Heritage Resources and Technologies (CLaDA-BG).

The paper by Dimitar Minev and Ivan Kratchanov presents a project initiated by National Library "Ivan Vazov", which aims to raise awareness of Plovdiv's socialist-era mural artworks.

Daniela Pavlova's paper discusses some new art forms and process management strategy in an era of mass digitalization.

The paper by Mirena Todorova-Ekmekci, Todor Todorov, and Kalina Sotirova-Valkova presents qualitative research results of interviews and digital content analyses of museums in Bulgaria.

The paper by Michela Tramonti and Alden Dochshanov presents the TEAM_STAR European project, focused on developing a 3D game environment to promote new skills to secondary school students.

The paper by Michela Tramonti, Alden Dochshanov, Mariya Monova-Zheleva, and Yanislav Zhelev discusses the application of gamification in different educational contexts as a powerful tool for attracting students' attention.

The paper by Nikolay Noev, Todor Todorov, Galina Bogdanova, and Negoslav Sabev presents the interdisciplinary research project "Digital Accessibility for People with Special Needs: Methodology, Conceptual Models and Innovative Ecosystems".

- *Workshops and Demos*

The Twelfth National Information Day: Open Science, Open Data, Open Access, Bulgarian Open Science Cloud, chaired by Peter Stanchev, Hristiyaniya Ancheva, Aneta Karaivanova, Radoslav Pavlov and George Simeonov gives an overview of the

current landscape and the activities on national and institutional level regarding Open Science, Open Access to scientific information, Open Data and the overall development of the Bulgarian Open Science Cloud.

The *Workshop on New Educational Applications of Digital Cultural Content*, chaired by Radoslav Pavlov, Desislava Paneva-Marinova, Detelin Luchev, Lubomir Zlatkov and Nikolay Noev presents the outcomes of the National Scientific Program “Cultural and Historical Heritage, National Memory and Social Development”, funded by the Ministry of Education and Science, and outlines some future trends for educational applications of virtual museums.

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Desislava Paneva-Marinova,
Radoslav Pavlov, Peter Stanchev
Detelin Luchev (Editors)