

# Personalization Approaches for Cultural Heritage Study

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**Abstract.** In this paper, we review different approaches of providing personalization for cultural heritage content – several static and adaptive approaches, and recommendation systems. The purpose of our research is to compare these methods, evaluate their feasibility for certain types of applications in the field. We outline the needs for personalized experience involving cultural heritage content and describe how those needs are addressed by the different approaches, and point the challenges, benefits, and disadvantages of each of these methods.

**Keywords:** Personalization, Adaptive Methods, Web Usage Mining, Content-based Filtering, Cultural Heritage.

## 1 Introduction

Personalization is becoming increasingly important in many industries, including e-commerce, entertainment, and education and business is reacting to the needs of their users more rigidly than the rest of the areas. Being able to see a tailored content based on one's needs and interests is a must, considering that we are living in the era of big data - having too many resources that can be useful for a learner. Moreover, due to the rapid digitalization of cultural content, there is an enormous amount of data that is in a variety of formats and not properly categorized which makes the need for personalized approach crucial. A system that allows users to access cultural content based on their context (e.g.: background, needs or social status) is no longer impossible as the advancements in technology and data analysis have made it possible to provide customized experiences to each consumer of content. An essential component for implementing personalized cultural experience for users is the recommendation system, as it helps match learners with the right materials and resources that fit their needs and interests. However, as mentioned the enormous amount of resources raises two problems - proper management and organization of the content and providing a personalised flow of data that could help with obtaining the right resources more easily. In this paper, we are discussing what approaches and how can the flow be optimized for a better learning curve (Liqiang & Quan, 2019).

## 2 The Need for Personalized Experience

Traditional academic systems often rely on a one-size-fits-all approach, which can lead to a lack of engagement and motivation for learners. With the advent of technology and the increasing availability of data, personalization has become a paramount aspect of modern systems (Fayyaz, Ebrahimian, Nawara, & Ibrahim, 2020). The benefits of personalization for learning and processing content are numerous. These systems can provide learners with materials that are tailored to their specific learning needs and interests, improving their engagement and overall performance (Liqiang & Quan, 2019). By providing learners with content that is tailored to their specific needs, they are more likely to engage with the material and retain it for longer periods. Furthermore, learners who receive personalized instruction are more likely to develop a sense of ownership over their learning, which can lead to greater motivation and a stronger desire to learn.

In the next sections, we are going to present static and dynamic approaches for a personalized experience. Static personalization can be fulfilled through user settings, and a dynamically tailored personalized experience can be achieved through recommendation systems, which are based on machine learning algorithms that analyse large amounts of data to identify patterns and relationships. In education, these systems can use data from a variety of sources, such as learners' prior performance and their behaviour, to recommend content that is most likely to be of interest and benefit to them. Moreover, personalized learning of cultural content refers to the adjustment of the educational experiences to the unique needs, interests, and abilities of each learner. This approach recognizes that each learner has a different learning style and pace and that a one-size-fits-all approach is no longer effective.

The algorithms used in these systems can also take into account a range of other factors, such as learning style, preferred learning pace, and subject matter expertise, to provide more personalized and accurate recommendations. This data can be used to create a unique learning path for each learner, ensuring that they receive content that is both relevant and challenging.

There are several benefits to using recommendation systems for cultural heritage content, including:

- Improved engagement: Personalized experience can provide learners with materials that are specifically designed to match their interests, which can increase their engagement and motivation to learn.
- Increased learning outcomes: By providing learners with content that is tailored to their individual needs, recommendation systems can help improve their academic performance and overall learning outcomes.
- Data-driven decision-making: Recommendation systems can provide valuable insights into learners' performance and engagement, which can be used to inform instructional decisions and improve the learning experience.

In the next section, we are going to summarize the different approaches to recommending the correct content and we are going to state the differences, advantages and disadvantages of those approaches.

### **3 Personalization Approaches**

Providing recommendations of the correct cultural content to learners can be done in various ways - statically by directly asking the users for their preferences and adding keywords in their profiles that correspond to their interests (Stefanov, Boychev, Stefanova, & Georgiev, 2011), using simple statistical methods - generating a list of cultural objects that are of interest of most of the users or that reflect a certain area of interest. The more advanced way to provide personalized content is by using adaptive methods - most of which involve a recommendation system. In this section we are providing an overview of the different approaches.

#### **3.1 Static Methods**

We refer to the first group of methods that we are going to present as static methods because the information is either directly provided by the user or gathered through some initial surveys and used afterwards without any dynamic adjustments. In our previous research (Christozov, & Mitreva, 2020; Mitreva, Nikolova, & Georgiev, 2021) we have extensively discussed the options to have user settings that could be updated by the users at any time and will provide information about their interests. Those settings can be viewed as static personalization - once set they could be changed, but are not dynamically changed based on the behaviour of the user. An improvement of that static approach is the availability of interests of the users stated in the profile and if the system gathers information about each cultural object that was accessed by the users, this can generate the data needed by any statistical method to provide a list of mostly accessed objects and offer to the user that list. Even further improvement that can view more as an adaptive rather than static method will be if semantic relationships can be found (Stoikov, 2021) and the lists of most interesting objects are grouped per topics and matched to the interests of the users that are stored in the profile.

The other likewise static method can be based on an initial survey (Deng, Li, Zhang, Ding, & Lam, 2022) or a test that is done by a user to collect useful data about the personal approach of the user.

Although those methods are not dynamic and efficient, they can be especially useful in the early stages of the use of a system, before any dynamic data is accumulated. Furthermore, as suggested in (Liqiang & Quan, 2019) each learner can provide details about their learning style so that the recommendation can be based on those properties. Those techniques can be combined with the adaptive ones after there is enough data to include the recommendation system because most adaptive algorithms work well with a lot of data, but they are lacking when sparse information is available.

#### **3.2 Adaptive Methods**

In this section we are discussing adaptive methods most of which involve a machine learning algorithm or even a few algorithms. Personalized content can be offered by developing a recommendation system and they work in three phases - collect infor-

mation about a user, apply the method to derive meaningful insights and finally recommend content to the user (Narke & Nasreen, 2020). One common approach is to use data and analytics to track learner progress and adapt the learning experience accordingly. This can involve using algorithms to analyze data such as behaviour patterns, learner's interactions with the learning environment, and objects that were accessed or even rated. Based on this analysis, the system can recommend new content or activities that are best suited to each learner's needs and abilities.

Another approach to personalization is to give learners more control over their learning. This can involve providing learners with a range of content and activities to choose from or allowing them to create their learning paths. In these cases, learners can select the content and activities that best suit their learning style and pace, which can lead to a more engaged and motivated learning experience.

**Profiles and Web Usage Mining.** Personalization via profiles can be included in both the static methods and the adaptive methods because we could have different techniques. The static approach was discussed in the previous section - profile settings can be set by the user and the content or the system can be altered based on those settings. The dynamic approaches to using profiles could be either web usage mining or a clustering algorithm (e.g. k-nearest neighbour) to determine that the profile is similar to a group and provide content that is "interesting" for the group of profiles.

The web usage mining approach was discussed in previous research (Christozov, & Mitreva, 2020; Mitreva, Nikolova, & Georgiev, 2021). The process of web usage mining is the extraction of useful patterns from the weblogs (Ju, & Wang, 2021), thus if the recommendation of learning content should be done in a web environment this technique can be useful. This process consists of several steps - gathering logs, cleaning the logs from all errors and not beneficial information and finally extracting useful rules and patterns of those (Srivastava, Garg, & Mishra, 2015). However, it is only applicable if we have a web system and sometimes the weblogs do not provide enough information that could result in an effective recommendation system. However, this approach could be used as an auxiliary method.

**Content-Based and Collaborative Filtering.** E-commerce is effectively using recommendation systems - product recommendations based either on previous users' orders or search history (Liao, Sundar, & Walther, 2022). This approach can be applied to learning content in systems storing cultural content by using content-based filtering or collaborative filtering. Content-based filtering is based on similarities of items and the accumulated information about a specific user (Liao, & Sundar, 2022). So, content-based filtering requires a lot of data about one user so that some insight about the user can be generated. Also, the algorithm has data only about what the user has searched for or accessed, which usually is limited by the knowledge of the user about certain items. This means that in a system with a lot of cultural objects, the user should have enough knowledge about the content and the relationships of the items in order for the algorithm to be successful. Although if semantic relations are found (Stoikov, 2021) and if the metadata of the items is properly stored, this algorithm can find useful similar

objects for the key interest of a learner that is using this system. However, content-based filtering focuses on the content and if ratings are not provided this approach will not yield good results (Schafer, Frankowski, Herlocker, & Shen, 2007), (Kapembe & Quenum, 2019)- an example of this is an object that is accessed because it is similar to other objects, but it is not what the user is searching for. As a result of the lack of ratings objects similar to the object that is considered not useful are offered. If the system is developed in a way to store not just the preferences of the user, but also their rating, this could make content-based filtering more effective, because large weight can be attributed to items that are useful or match completely the user's needs and small and even negative weights for items that are not interesting for the learner.

Nevertheless, content-based filtering is considered inferior to collaborative filtering, because collaborative filtering is a method of making recommendations based on the preferences of a group of people, rather than relying on a single user's preferences (Schafer, Frankowski, Herlocker, & Shen, 2007), (Liao, & Sundar, 2022). The idea behind collaborative filtering is that people who have similar likings in the past are likely to have similar choices in the future. There are two main types of collaborative filtering techniques: user-based and item-based (Kapembe, & Quenum, 2019). User-based collaborative filtering looks at the preferences of similar users to make recommendations to a given user. Item-based collaborative filtering looks at the preferences of users for similar items to make recommendations.

Collaborative filtering compares the preferences of users to find similarities and uses these similarities to make recommendations. In practice, this involves calculating a similarity score between users or items and using this score to determine which items are likely to be of interest to a given user. One of the key challenges in implementing collaborative filtering is handling the large amounts of data required to calculate similarity scores and make recommendations. This data can include user preferences, ratings, and demographic information, and can come from a variety of sources, such as surveys, website clicks, and purchase history.

Based on Schafer et al. (2007) collaborative filtering is considered the most effective approach to provide personalized experience and considering the rest of the methods that we have presented, it is indeed the technique that we think will yield the best results despite the fact that even that approach has some challenges and disadvantages. This is because if enough data is collected from different users, adequate recommendations can be provided for things that similar users are interested in. For example, if we are interested in certain cultural items that are of some category and other users are interested in the same category, there is a high chance another category that is interesting for those users to be interesting to us. Of course, the proper data needs to be collected about the behaviour of the users in order for that approach to work. Similar to what was done in another system - ShareTEC (Stefanov, Boychev, Stefanova, & Georgiev, 2011) - the data for the actions and behaviour of the users should be stored separately and some calculations must be done asynchronously because running algorithms on large amounts of data sometimes take more time than acceptable and the result should be provided immediately.

Although we consider collaborative filtering as the best approach among all the methods we have researched and presented here in the next section we consider all of

the challenges and benefits of them all and suggest the creation of a hybrid approach - a combination of both static and adaptive methods.

#### **4 Challenges and Benefits of the Different Approaches**

The static methods for personalization are quite rudimentary they are not providing much personalization of content rather than predefined options in the profile of the user. Web usage mining has limited effectiveness, because of the tiresome process of gathering the logs and the process of cleaning and processing them. That approach can definitely be used and will provide adaptive content, but it can be done on a web-based system, which logs we could collect and process. Sometimes the actual gathering of the logs might not be trivial, thus the process might not that straightforward.

The adaptive methods, on the other hand, can provide unsatisfactory results in the early stages of the collection of the information and at the same time if there is too much data it can be also a problem because the recommendation should be calculated and produced in real-time (Fayyaz, Ebrahimian, Nawara, & Ibrahim, 2020). Another issue with those approaches is the fact that users tend to rate a limited number of items, so the method cannot differentiate between positive and negative examples. However, based on our research admittedly collaborative filtering can produce the best results, especially if there is enough data about the users so that the proper group of users with similar interests can be identified.

As mentioned in Fouad et al. (2022) just one recommendation approach probably will provide good results only for specific data, but not in all cases. Based on some things we have researched in ShareTEC (Stefanov, Boychev, Stefanova, & Georgiev, 2011) a good approach will be a hybrid approach. As a first step before there is enough data is collected to use collaborative filtering, we can use some of the static approaches - user preferences, keywords for interests, etc. Based on the user preferences and the interests of the users we could offer a list of items that are mostly accessed - either globally or grouped by a certain area or interest - this could be done by only using simple statistical methods. This could offer enough initial personalization so that a learner can start exploring different cultural objects and data. Of course, cultural objects need to be stored with as much metadata and additional data as possible so that the objects are not just big data, but something that could be useful. Also, as much information about the behavior of the users and ratings for the different objects needs to be stored and processed in a way that the data is easily used for real-time recommendations. After enough data is collected preferably with ratings for the content or enough user information so that the user can be allocated to the proper cluster of users, then collaborative filtering to be used.

#### **5 Future Work and Conclusion**

Providing personalization is an important tool for cultural heritage content due to the different needs and interests of the users. To improve the engagement of the users, data analysis and machine learning algorithms are used to provide learners with content that

is tailored to their individual needs. With the continued growth of technology and data analysis, the use of personalization in all areas is likely to become more widespread. As a next step in our research, we are planning to implement that hybrid approach and test it with the available data.

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# Thirteenth International Conference Digital Presentation and Preservation of Cultural and Scientific Heritage DiPP2023

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## Conference Objective

The Thirteenth International Conference on *Digital Presentation and Preservation of Cultural and Scientific Heritage—DiPP2023* aims at presenting innovative results, research projects and applications in the field of digitisation, documentation, archiving, representation and preservation of global and national tangible and intangible cultural and scientific heritage. The focus is on providing open access to digitised cultural heritage and setting up sustainable policies for its continuous digital preservation and conservation. The priority area is the digital presentation and preservation of cultural and historical objects under conditions of risk, including those from the Burgas region. The forum will demonstrate innovative technologies and prototypes which result from established practices and achievements in the field. Representatives from a number of public and specialised libraries, museums, galleries, archives, centres, and national as well as foreign research institutions and universities will be invited to participate and exchange experiences, ideas, knowledge and best practices of the field.

The principal organiser of the conference is the *Institute of Mathematics and Informatics, Bulgarian Academy of Sciences*. Co-organisers are Regional Academic Center of the Bulgarian Academy of Sciences—Burgas, Regional Historical Museum—Burgas, Burgas Free University, Peyo Yavorov Regional Library—Burgas. University "Prof. Dr. Assen Zlatarov"—Burgas. The event is organized with the financial support of the *National Scientific Fund* (Contract No. KII-06-MHΦ/4/19.05.2023) and is under the patronage of *UNESCO* and the *Burgas Municipality*. The National Scientific Fund cannot be held responsible for the content of the reports presented at the scientific forum or of associated advertising and other material.

## Accompanying Events

- Workshop and 14<sup>th</sup> National Information Day: *Open Science, Open Data, Open Access, Bulgarian Open Science Cloud*, partially supported of the National Roadmap of Research Infrastructures under Grant number D01-168/28.07.2022;
- Workshop: *Promoting the Green Transition through University Education on Green Standards*, organized by Burgas Free University in the frame of the international project B-Green-ED - Boosting the Green Future via University Micro-Credentials, funded by the European Union in the framework of the Erasmus+ Programme |

KA220-HED - Cooperation partnerships in higher education by the Bulgarian National Agency;

- Second Information Day: *Research Infrastructure Services in the Humanities and Social Sciences*, organized by the Institute of Mathematics and Informatics, Bulgarian Academy of Sciences in the frame of the CLaDA-BG, the Bulgarian National Interdisciplinary Research e-Infrastructure for Resources and Technologies in favor of the Bulgarian Language and Cultural Heritage, part of the EU infrastructures CLARIN and DARIAH, Grant numbers DO1-167/28.07.2022 and DO1-301/17.12.2021.

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## Preface

The main aim of the Thirteenth International Conference *Digital Presentation and Preservation of Cultural and Scientific Heritage (DiPP2023)* 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 Gizella Börcsök, Róbert Z. Nagy, Krisztián Vollmuth, Zsolt L. Márkus, András J. Molnár, György Szántó, Tibor Szkaliczki, Miklós Veres and Zsolt Weisz presents video documentation, virtual tours, and other ICT tools, used for the multimedia documentation of the chapel of Assumption of Mary in Budapest, Hungary.

The paper of Sevdalina Turmanova presents activities of the Association "Regional Academic Center of Bulgarian Academy of Sciences" in Burgas is participation in the development of methods and technologies for digitalization of the cultural and historical heritage of the Black Sea region.

The paper by Marco Scarpa, Marta Riparante and Desislava Paneva-Marinova describes the collaboration between philologists and computer scientists for the ongoing palaeographic research project "Fourteenth Century South Slavonic scribes and scriptoria (palaeographical attribution and online repertorium)".

The paper by Daina Valeine overviews the status of institutional repositories in Latvian higher education identifying the purpose, performance and use of repositories, with a focus on the digitisation and sharing of scientific heritage.

The paper by Petya Osenova discusses the creation of the multilingual corpora from parliamentary debates as part of the ParlaMint infrastructure.

The paper by Galina Bogdanova, Todor Todorov and Nikolay Noev focuses on semantic design techniques and taxonomy models for the digitization of resources intended for people with disabilities.

- *Full papers*

The paper by Maxim Goynov, Detelin Luchev, Desislava Paneva-Marinova, Silvia Najdenova, Lubomir Zlatkov, Lilia Pavlova and Evita Pilege outlines the design and the development of the digital library for noteworthy scientific literary heritage, created for the needs of the Central Library of the Bulgarian Academy of Sciences.

The paper by Margaret Dimitrova, Maxim Goynov, Konstantin Rangochev, Detelin Luchev and Gita Senka discusses users' search behaviour in the Encyclopaedia Slavica Sanctorum, a calendar-oriented multimedia platform illustrating *die Rezeption* of the Christian saints' cults amongst the Bulgarians since the Middle Ages to the present day.

The paper by Rosen Ivanov and Victoria Velkova presents the architecture of a Web application designed to deliver personalized content to museum visitors.

The paper by Dušan Tatić, Radomir S. Stanković, Marko Jovanović and Jovan Stojanović presents the enhancement of the features of the multimedia guide for the open-air War Museum of Niš, Serbia.

The paper by Dimitrina Popova introduces the digital reconstruction of destroyed houses from the 19<sup>th</sup> century in the town of Teteven, Bulgaria.

The paper by Marta Riparante and Milena Davidović compares the distinctive features of two of the 14<sup>th</sup> century Dečani manuscripts, as part of the development of scientific method applicable for South Slavic digital palaeography.

The paper by Maria Teresa Artese and Isabella Gagliardi proposes an approach for creation of semantic graphs from archive contents.

The paper by Veneta Tabakova-Komsalova, Asya Stoyanova-Doycheva, Alexander Petrov and Laska Kostadinova-Tzankova explores the existing international standards for presenting cultural heritage and proposes a formalism for presentation of Bulgarian folklore knowledge.

The paper by Julie Agrain, Antoine Poulain and Adélaïde Albouy-Kissi introduces a new method for designing 3D bobbin lace patterns.

The paper by Alexander I. Iliev examines the benefits and security issues associated with big data analytics and proposes a data analysis approach for digital presentation and preservation of cultural heritage.

The paper by Emanuela Mitreva, Alexandra Nikolova, Vladimir Georgiev and Ani Gigova reviews different approaches of providing personalization for cultural heritage content.

The paper by Evita Pilege outlines a digitally based career guidance system for the needs of the cultural and creative industries.

The paper by Evgeniya Nikolova, Mariya Monova-Zheleva and Yanislav Zhelev presents the main results of a survey on the readiness of universities to provide inclusive Industry 4.0 education, conducted in Bulgaria, Greece, Italy and Latvia.

The paper by Todor Todorov and Pajtim Vela overviews some of the popular scientific databases and their accessibility to people with visual disabilities, and presets the application of scientific resources and databases in Kosovo's education institutions.

The paper by Yavor Dankov and Andjela Dankova proposes a classification of educational video games in the domain of cultural heritage.



The paper by Yavor Dankov presents a summary model of the design process of educational video games for cultural heritage and exemplifies the usability of the model for educational games design.

The paper by Ivet B. Koleva, Borislav R. Yoshinov and Radoslav R. Yoshinov discusses an educational model for COVID-Rehabilitation.

The paper by Ivet B. Koleva, Borislav R. Yoshinov and Radoslav R. Yoshinov describes the application of Digital Health technologies for prevention of paravertebral pain.

- *Short papers*

The paper by Todor Todorov and Shpend Lutfiu focuses on watermarking techniques, used in the digitization process and analyses of algorithms for protecting intellectual property of digital heritage content

The paper by Irena Peteva, Daniela Pavlova and Ivanka Pavlova explores cloud technologies' role in cultural preservation and promotion, analyzing accessibility, collaboration, and cost-effectiveness.

- *Project papers*

The paper by Maria Teresa Artese, Isabella Gagliardi, Mattia Fortunati and Tiziana Pasciuto proposes heritage dissemination digital storytelling tools and games based on the Querylab's ICH Discovery section resources.

The paper by Michela Tramonti, Alden Dochshanov and Fabrizio Casadio presents two Erasmus Plus projects that utilize digital storytelling in education and training.

The paper by Alden Dochshanov and Michela Tramonti describes the design and implementation of a programmable Arduino-based bot with an accent on the underpinning principles educational robotics.

The paper by Mariya Monova-Zheleva, Yanislav Zhelev, Michela Tramonti and Alden Dochshanov discusses an approach for improvement of the digital skills and competencies of adult educators.

The paper by Ivan Krachanov and Dimitar Minev presents a concept for a serious game based on an augmented reality representation of a mural artwork located in the National Library "Ivan Vazov" in Plovdiv, Bulgaria.

The paper by Daniela Pavlova, Irena Peteva and Ivanka Pavlova explores the intersection of e-Governance and cultural heritage digitization.

The paper by Radovesta Stewart gives a comprehensive overview of the interactive exposition centre at Aquae Calidae, Burgas, Bulgaria.

The paper by Radovesta Stewart and Colin Stewart investigates the digital approaches for the presentation of tourist sites with historical significance, including the use of virtual reality, digital libraries and interactive web platforms.

The paper by Emanouil Atanassov, Todor Gurov and Aneta Karaivanova analyses the current state of the Bulgarian Centres of Competence in High Performance Computing.

- *Workshops and Demos*

*The Workshop and the 14<sup>th</sup> National Information Day: Open Science, Open Data, Open Access, Bulgarian Open Science Cloud*, chaired by Peter Stanchev, Aneta Karaivanova, Yanita Zherkova, Hristiyaniya Klisarova, Jordan Iliev, 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 Promoting the Green Transition through University Education on Green Standards*, chaired by Yanislav Zhelev, Mariya Monova-Zheleva and Diana Sabotinova describes the approach and concept of the international project Boosting the Green Future via University Micro-Credentials (B-Green-ED), funded by the Erasmus+ program KA220-HED - Cooperation partnerships in higher education.

*The Information Day: Research Infrastructure Services in the Humanities and Social Sciences*, chaired by Desislava Paneva-Marinova, Radoslav Pavlov, Detelin Luchev, Maxim Goynov and Nikolay Noev presents results of the work of the Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences on the project CLaDA-BG, the Bulgarian National Interdisciplinary Research e-Infrastructure for Resources and Technologies in Favor of the Bulgarian Language and Cultural Heritage, Part of the EU Infrastructures CLARIN and DARIAH: the development of the humanities and social sciences data storage, retrieval and curation environment and its implementation in the digital library of the Central Library of the Bulgarian Academy of Sciences and in the digital library “Encyclopaedia Slavica Sanctorum”. The improvements of the previous implementation (digital library “Virtual Encyclopedia of Bulgarian Iconography”, digital library of “Ivan Vazov” Regional Library in Plovdiv and “Peyo Yavorov” Regional Library – Burgas) are also discussed.

Burgas, Bulgaria  
September 07, 2023

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



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17 February 2023

**The Assistant Director-General  
for Priority Africa and External Relations**

Ref: CI/EO/23/CM8933

Dear Professor Stanchev,

On behalf of the Director-General, I wish to thank you for your letter of 30 September 2022, in which you requested UNESCO's patronage for the Thirteenth International Conference on Digital Presentation and Preservation of Cultural and Scientific Heritage (DiPP2023) that will take place in Burgas, Bulgaria, from 7 to 10 September 2023.

By promoting the preservation of cultural and scientific heritage, particularly open access to scientific information and data, this initiative contributes to UNESCO's mission, for which I congratulate you.

Therefore, I am delighted to inform you that the Director-General has decided to grant UNESCO's patronage to this event. As such, and in accordance with the General Conditions enclosed herewith, you may use the Organization's logo for the Thirteenth International Conference on Digital Presentation and Preservation of Cultural and Scientific Heritage.

Wishing every success for this event, I remain,

Yours sincerely,

Firmin Edouard Matoko

Enc.: General Conditions for the Use of the Name and Logo of UNESCO in Connection with Patronage

cc: Permanent Delegation of the Republic of Bulgaria to UNESCO  
National Commission of the Republic of Bulgaria for UNESCO

## Table of Contents

### Invited Papers

1. *Gizella Börcsök, Róbert Z. Nagy, Krisztián Vollmuth, Zsolt L. Márkus, András J. Molnár, György Szántó, Tibor Szkaliczki, Miklós Veres, Zsolt Weisz* – Revival and Multiplatform Presentation of Forgotten Religious Heritage Sites in the Project Named “Sacred Past” .....19
2. *Sevdalina Turmanova* – Regional Academic Centers and Their Role for Digitalization of the Cultural and Historical Heritage of the Black Sea Region .....31
3. *Marco Scarpa, Marta Riparante, Desislava Paneva-Marinova* – Online Database of 14<sup>th</sup>-century South Slavonic Manuscripts. Research Results and Perspectives ...39
4. *Daina Valeine* – Academic Institutional Repositories for Studies, Research and Preservation of Scientific Heritage in Latvia .....45
5. *Petya Osenova* – The Role of Language Technologies in Digital Humanities (The Case of Parliamentary Debates) .....61
6. *Galina Bogdanova, Todor Todorov, Nikolay Noev* – Model of Taxonomy for Accessibility Ontology .....69

### Full Papers

7. *Maxim Goynov, Detelin Luchev, Desislava Paneva-Marinova, Silvia Najdenova, Lubomir Zlatkov, Lilia Pavlova, Evita Pilege* – Digital Revival of the *Bulgarica* Collection of the Central Library of the Bulgarian Academy of Sciences .....77
8. *Margaret Dimitrova, Maxim Goynov, Konstantin Rangochev, Detelin Luchev, Gita Senka* – “*Encyclopaedia Slavica Sanctorum*” Ten Years Later: Main Trends and Questions .....87
9. *Rosen Ivanov, Victoria Velkova* – Tangible and Personalized Smart Museum Application .....97

10. <i>Dušan Tatić, Radomir S. Stanković, Marko Jovanović, Jovan Stojanović</i> – Application of Geolocation Module in the Electronic Multimedia Guide .....	107
11. <i>Dimitrina Popova</i> – Digital Reconstruction of Lost Architectural Heritage on the Case Study of Two 19 <sup>th</sup> Century Houses .....	117
12. <i>Marta Riparante, Milena Davidović</i> – The Case Study of the Serbian Copyist Ioan. On the Development of a Scientific Method for South Slavonic Palaeography .....	127
13. <i>Maria Teresa Artese, Isabella Gagliardi</i> – Unsupervised Creation of Semantic Graphs to Navigate Intangible Cultural Heritage Using Transformers .....	137
14. <i>Veneta Tabakova-Komsalova, Asya Stoyanova-Doycheva, Alexander Petrov, Laska Kostadinova-Tzankova</i> – An Approach to Data Representation and Processing of Knowledge from the Bulgarian Folklore .....	149
15. <i>Julie Agrain, Antoine Poulain, Adélaïde Albouy-Kissi</i> – Representing and Creating 3D Bobbin Lace .....	159
16. <i>Alexander I. Iliev</i> – Benefits and Security Challenges of Big Data Analytics .....	169
17. <i>Emanuela Mitreva, Alexandra Nikolova, Vladimir Georgiev, Ani Gigova</i> – Personalization Approaches for Cultural Heritage Study .....	181
18. <i>Evita Pilege</i> – Career Guidance Model for Digital Transformation in the Cultural and Creative Industries .....	189
19. <i>Evgeniya Nikolova, Mariya Monova-Zheleva, Yanislav Zhelev</i> – University Readiness for Inclusive Digital Education in Industry 4.0 Era: Survey Results .....	199
20. <i>Todor Todorov, Pajtim Vela</i> – Usage of Digitised Scientific Resources in Educational Institutions .....	209
21. <i>Yavor Dankov, Andjela Dankova</i> – Educational Video Games as Tools for Raising Awareness of the Protection and Preservation of Cultural Heritage .....	219
22. <i>Yavor Dankov</i> – The Design Process of Educational Video Games in Cultural Heritage .....	229
23. <i>Ivet B. Koleva, Borislav R. Yoshinov, Radoslav R. Yoshinov</i> – Electronic Repository of Educational Materials on the Topics “Rehabilitation in Post-COVID” and “Neurorehabilitation in Neuro-COVID”: Structure of the Course and Analysis of Learners’ Opinion .....	239
24. <i>Radoslav R. Yoshinov, Borislav R. Yoshinov, Ivet B. Koleva</i> – Digital Health: A Web-based Repository with Back School Recommendations and Exercises against	

Paravertebral Pain (with a Comparative Study of the Opinions of Responders of Different Generations) .....	251
--	-----

### Short Papers

25. <i>Todor Todorov, Shpend Lutfiu</i> – Intellectual Property Protection of Digital Cultural Heritage .....	263
26. <i>Irena Peteva, Daniela Pavlova, Ivanka Pavlova</i> – The Impact of Cloud Technologies on Preserving and Promoting Cultural Identity .....	269

### Project Papers

27. <i>Maria Teresa Artese, Isabella Gagliardi, Mattia Fortunati, Tiziana Pasciuto</i> – Storytelling and Gaming Tools for Easy Immersive Fruition of Intangible Heritage .....	277
28. <i>Michela Tramonti, Alden M. Dochshanov, Fabrizio Casadio</i> – Digital Storytelling Approach for Environmental Challenges and the Early School Leaving Prevention .....	283
29. <i>Alden M. Dochshanov, Michela Tramonti</i> – The Design and Implementation of an Open-source Programmable Bot for Educational Purposes .....	289
30. <i>Mariya Monova-Zheleva, Yanislav Zhelev, Michela Tramonti, Alden M. Dochshanov</i> – Fostering the Development and Implementation of Digital Learning Strategies for Digitization in Schools .....	299
31. <i>Ivan Kratchanov, Dimitar Minev</i> – Towards an Augmented Reality Game for Learning about Ivan Vazov's Literary Works .....	305
32. <i>Daniela Pavlova, Irena Peteva, Ivanka Pavlova</i> – Cultural Heritage through the Lens of e-Governance .....	311
33. <i>Radovesta Stewart</i> – Aquae Calidae - New Museum Exposition Based on Various Digitalization Methods .....	317
34. <i>Radovesta Stewart, Colin Stewart</i> – Digital Approaches for the Presentation of Tourist Sites with Historical Significance .....	325
35. <i>Emanouil Atanassov, Todor Gurov, Aneta Karaivanova</i> – Towards Effective Bulgarian Competence Centre in High Performance Computing – Service Portfolio and Competences .....	333

### **Workshops and Information Days**

36. *Peter Stanchev, Aneta Karaivanova, Yanita Zherkova, Hristiyaniya Klisarova, Jordan Iliev, Radoslav Pavlov, Georgi Simeonov* – The 14<sup>th</sup> National Information Day: Open Science, Open Data, Open Access, Bulgarian Open Science Cloud ....343
37. *Yanislav Zhelev, Mariya Monova-Zheleva, Diana Sabotinova* – Workshop “Promoting the Green Transition through University Education on Green Standards” .....353
38. *Desislava Paneva-Marinova, Radoslav Pavlov, Detelin Luchev, Maxim Goynov, Nikolay Noev* – Second Information Day: Research Infrastructure Services in the Humanities and Social Sciences .....359