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UniDive

2nd General Meeting

University of Naples "L'Orientale

Naples, Italy, 8-9 February 2024

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cost EUROPEAN COOPERATION

Funded by the European Union

REVITALIZING THE HISTORICAL ROMANIAN TEXTS WITH CYRILLIC SCRIPTS

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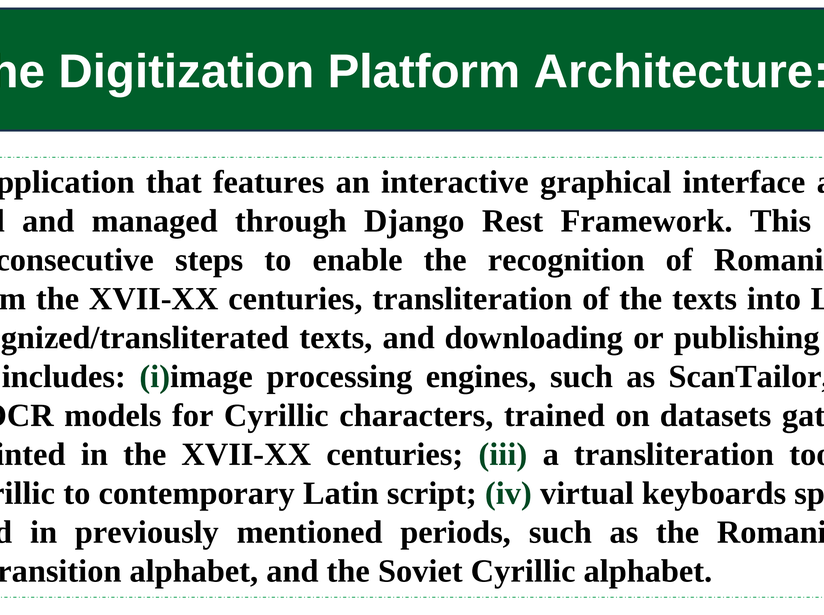
The Aim:

The aim of our work is revitalizing the historical Romanian texts with Cyrillic Scripts from the XVII – XX century.

- to create linguistic resources of the Historical Romanian
- to reissue a folkloric books in latin script that will be used for educational purposes
- for philological research, for instance at lexicographical diachronic analysis and others

The Digitization Platform Architecture:

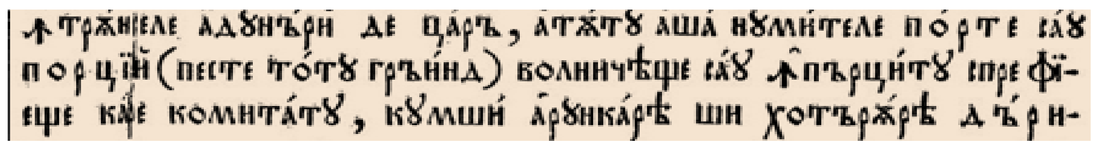
DP is a web application that features an interactive graphical interface and a set of APIs designed and managed through Django Rest Framework. This application offers seven consecutive steps to enable the recognition of Romanian Cyrillic documents from the XVII-XX centuries, transliteration of the texts into Latin script, editing of recognized/transliterated texts, and downloading or publishing the results. The platform includes: (i)image processing engines, such as ScanTailor, AFR, and OpenCV; (ii)OCR models for Cyrillic characters, trained on datasets gathered from documents printed in the XVII-XX centuries; (iii) a transliteration tool from old Romanian Cyrillic to contemporary Latin script; (iv) virtual keyboards specific to the alphabets used in previously mentioned periods, such as the Romanian Cyrillic alphabet, the transition alphabet, and the Soviet Cyrillic alphabet.



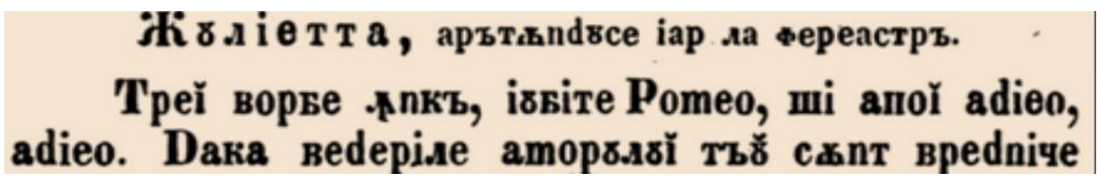
The Challenges:

We researched various types of historical documents such as: manuscripts, religions books, dialectal text and others. The endeavor to address the linguistic heritage of Romanian history involves tackling several specific challenges, including:

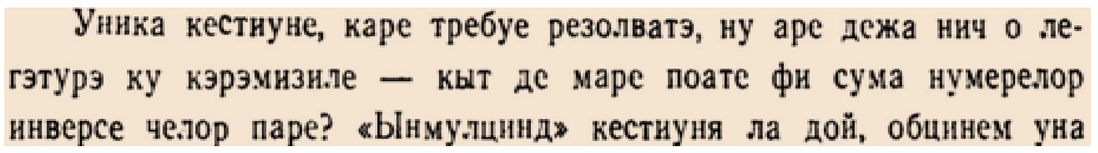
1) dealing with a multitude of language evolution periods;
2) coping with the scarcity of widely available resources;
3) managing the diverse array of alphabets used in historical printings, including mixed Cyrillic-Latin "transition alphabets";
4) overcoming the absence of reliable tools for accurately recognizing Cyrillic letters from various historical eras;
5) addressing the shortage of lexicons suitable for the time periods of these resources.



XVIII Century



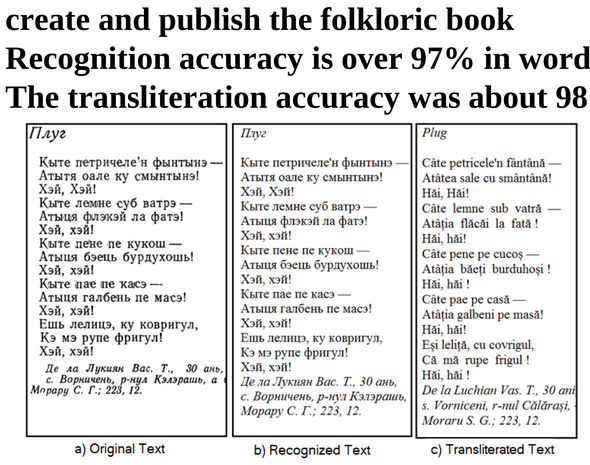
XIX century, mixed alphabet



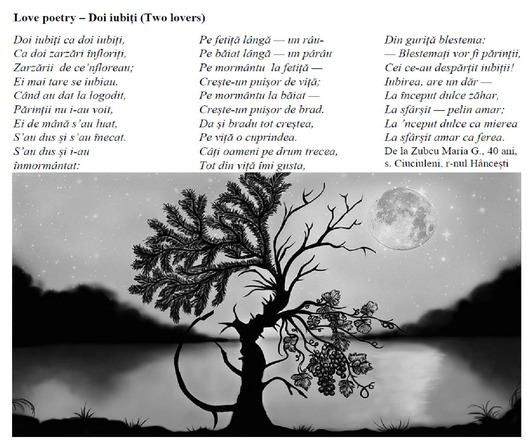
XX Century

Case Study:

- The main resource is a national folkloric book;
- We used the tool pack developed in our institute to process the book "Folclor din părților";
- We organized a team of volunteers to illustrate the textual message in order to create and publish the folkloric book
- Recognition accuracy is over 97% in words;
- The transliteration accuracy was about 98%.



a) Original Text b) Recognized Text c) Transliterated Text



Realization and Future Work:

- A Diachronic Corpus for Romanian (RoDia) - ACL Anthology https://aclanthology.org/W17-8101/
- Development of the Digitization Platform HeDy. https://digitizare.math.md/
- Manuscript: Digitization of Romanian Historical Printings.

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