

Arvest: an open source tool for multimodal document network analysis

Abstract

According to Thomas Smits and Melvin Wevers (Smits & Wevers, 2023), digital humanities has taken a multimodal turn in recent years. This paradigm is manifested in the data that researchers manipulate (text, images, audio and video) as well as the methods that they use for analysis. Indeed, over the past few decades, numerous cultural institutions have embarked upon vast digitization campaigns of their collections, and many digital humanities researchers also produce large amounts of multimodal data as part of bespoke research projects. It has become apparent that strategies around the storage of this data, its modelisation through diverse ontologies, and the manner in which it is rendered accessible and consultable leave much to be desired in terms of interoperability, standardisation, open science and FAIR principles (Bernard et al. 2022). This has led to a situation where much of the data becomes trapped in silos. Consequently, it becomes difficult to promote multimodal approaches in humanities research. In this paper, we present a tool that has been forged with these concerns at its heart: Arvest.

Arvest's point of departure is IIIF¹ (International Image Interoperability Framework). Initially conceived of as a set of standards to allow for interoperable sharing, referencing and annotation of digital images (Snydman, Sanderson, and Cramer 2015), we use it as a framework at the base of an environment for multimodal document network analysis. Supported by an international consortium of over 60 members (including Stanford University, Yale, The British Library and The Bibliothèque Nationale de France), it gathers a strong community of researchers, developers and cultural professionals. IIIF has quickly become a standard for many universities and cultural institutions across the globe.

If the latest version of the IIIF Presentation API² supports audiovisual documents, the many IIIF viewers such as Mirador³ and Universal Viewer⁴ - the softwares available to consult IIIF content - do not yet support playback of these resources. Arvest contributes this functionality to the IIIF community. Departing from work by Tokyo University⁵, we have created a branch of Mirador that supports full audio and video playback (Bardiot et al. 2023). We are working with the Mirador development team to integrate this functionality as part of the main version of their viewer.

This first step served as a basis for Arvest, which is a fully IIIF-compatible tool where projects can incorporate any number of the millions of already existing IIIF-format documents as well as multimodal content uploaded by the user. Its major functionalities are as follows:

1 <https://iiif.io/>

2 <https://iiif.io/api/presentation/3.0/>

3 <https://projectmirador.org/>

4 <https://universalviewer.io/>

5 <https://github.com/2SC1815J/mirador>

1. Annotations and metadata. Documents of any kind can be annotated in a number of ways: textual annotations, visual overlays, time-based annotations for audio and video documents. Every document and every annotation in Arvest can also be given metadata, by default following the Dublin Core ontology⁶.

2. Document networks. Annotations can also be linked to another document, which allows the user to create and navigate networks of multimodal documents. These networks can be explored fluidly, allowing for seamless shifts in perspective between close and distant-reading approaches. This functionality also ensures that artifacts such as computationally-driven visualizations of document collections can be decomposed, and lead back to the various original sources.

3. Multi-user environment. Arvest is an open source, free to use web app. This means that anyone with an email can create an account and start adding, annotating and engaging with content. This is also a notable contribution to the IIF community which can sometimes suffer from a significant technical barrier that must be overcome in order to start using IIF-driven content and approaches.

This project follows a practice-driven approach to development based on case studies and workshops, notably in the context of Clarisse Bardiot's ERC-funded STAGE project. In this paper, we shall demonstrate some of Arvest's functionalities across a number of different case studies in performing arts, musicology and publishing through a process of redocumentation and editorialisation as suggested by (Zacklad 2007) and Vitali-Rosati (Vitali-Rosati 2020).

Following IIF's philosophy of interoperability and open access to cultural heritage, we propose Arvest as a tool for open exploration of cultural silos, where documents from across the world can be consulted, consolidated and analyzed. As of September 2024, the beta version of Arvest will be freely available as a flexible and open tool to engage with these collections. We have endeavored to design Arvest in a manner that would facilitate seamless alignment with other IIF-oriented workflows (for example wide IIF content discovery systems (such as Biblissima's IIF Collections of Manuscripts and Rare Books project⁷), or crowd sourcing projects (such as the National Library of Wales' NLF Crowd project⁸)). To create a fully open and extensible environment usable not only by non-techno-fluent users but also integral to more advanced digital humanities research, we will be developing an open API. This API will enable users to create and access content remotely, supporting complex computationally-driven workflows and ensuring the full interoperability and openness of their results.

6 <https://www.dublincore.org/>

7 <https://iif.biblissima.fr/collections/>

8 <https://torf.llyfrgell.cymru/s/lgc/page/Home>

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