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Title: The power of generative AI for CRIS systems: a new paradigm for scientific information management

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Extended Abstract

In the evolving landscape of Current Research Information Systems (CRIS), the integration of Generative Artificial Intelligence (AI) marks a transformative era in managing scientific information.

CRIS systems today

The significant advancements in CRIS over the past two decades, emphasizing the enhanced data quality, accessibility, and interoperability facilitated by standards such as CERIF and FAIR models, have provided well established institutional CRIS containing reliable and interoperable data. More and more work has been done on CRIS containing aggregated information from heterogeneous sources, which can be either regional, national, thematic, or departmental Portals (*Search the DRIS* | *EuroCRIS*, n.d.).

Relevant work related to these aggregated CRIS Portals is being carried out. The CRISCROS international working group is an example. (*CRISCROS – A Working Group to Bring Together National and Regional CRIS Initiatives* | *EuroCRIS*, n.d.).

There are also relevant repositories that collect open access publications and other types of research works and outputs such as OpenAIRE or OpenAlex.



So, the maturity of these CRIS systems, coupled with their increasing complexity due to the aggregation of diverse data sources, sets the stage for the innovative application of generative AI technologies.

AI for CRIS systems

As CRIS systems have several purposes for researchers, research managers and decision makers, different AI algorithms can be incorporated that support these profiles and facilitate their work.

Some of the most common types of AIs used in research are, according to ((Collins et al., 2021):

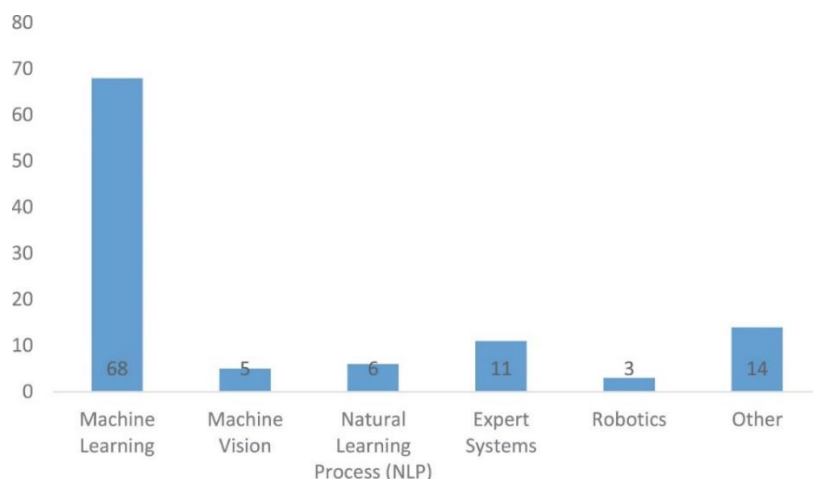


Fig 1. Types of AI for Research

As experts say, “*any (natural) intelligence that performs an activity that can be improved by being performed by another (artificial) intelligence, will eventually be replaced by the latter*”. Sénen Barro (*Inteligencia Artificial: ¿quererla o Temerla?* - YouTube, n.d.)

In this way, Generative AI, with its capacity for natural language processing (NLP) and machine learning (ML), offers unprecedented opportunities to support the multifaceted needs of researchers, research managers, and decision-makers. This paper presents a comprehensive analysis of potential generative AI applications within CRIS systems, identifying key benefits such as improved data quality, advanced analysis and visualization capabilities, and enhanced decision-making support. However, the integration of AI also introduces challenges, including data quality assurance, architectural requirements, ethical considerations, and the need for transparency and trust in AI-generated outcomes.

The integration of Artificial Intelligence (AI) in research information management has the potential to significantly benefit both research managers and researchers. AI can enhance

the capabilities of research managers by facilitating tasks such as information analysis, identification of funding sources, and providing greater support to researchers (Baker, 2023). Furthermore, AI can assist researchers in tasks such as searching and summarizing relevant scientific literature for their research, analyze large datasets, identify patterns, curriculum vitae (CV) development, and support for writing funding proposals (*AI Research Proposal Generator* | Taskade, n.d.). (Exploring the Use of AI in Universities - Global Admissions, n.d.). Additionally, AI can contribute to supporting decision-making and evaluation processes in a general research context (Singh Chawla, 2022).

Nevertheless, the success of the AI application is linked to CRIS systems being constantly and adequately fed.

A series of surveys have been conducted among academic stakeholders, such as the one conducted in 2022 by Chubb, Cowling & Reed (Chubb et al., 2022), in which it is concluded that whilst AI has great potential in research, it is incumbent upon actors across the research ecosystem (academics, institutions, funders and governments) to ensure that it is not used as another bureaucratic tool which further metrics and destabilises research quality and academic identities and expertise.

Spanish universities AI landscape

An examination of the implementation of AI in CRIS systems within Spanish universities reveals it to be in its early stages, with the application of AI being rather limited. In fact, more than 62% of these institutions do not yet utilize AI-related tools. Thus, it is clear that there is still significant progress to be made in this area.

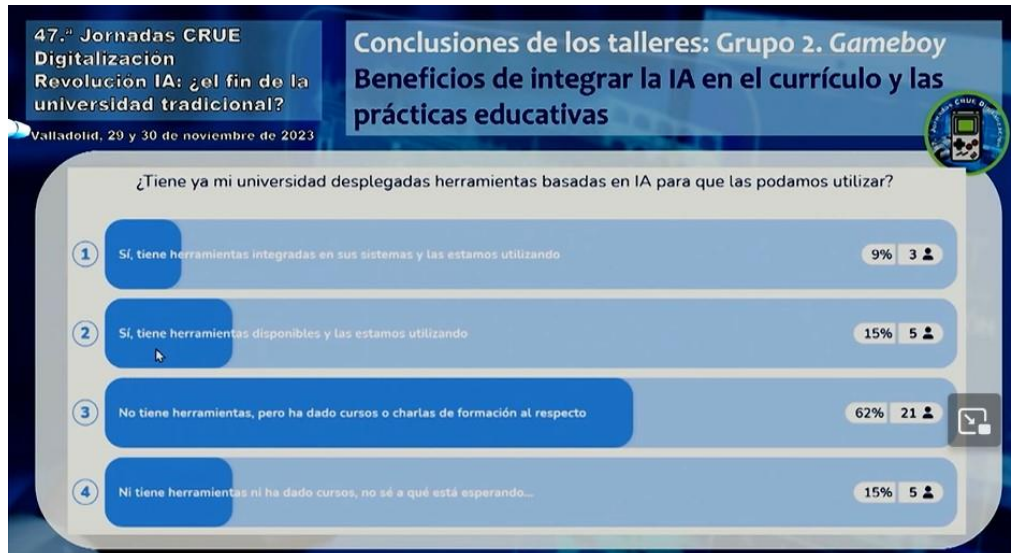


Fig. 2 AI-based tools in Spanish Universities

((35) CONCLUSIONES DEL TRABAJO GRUPAL | 47.a JORNADAS DE LA SECTORIAL CRUE DIGITALIZACIÓN - YouTube, n.d.)

Conclusions

The paper highlights emerging AI-enabled tools for research, illustrating the practical implications of AI integration in CRIS systems. By navigating the benefits and challenges of generative AI, CRIS systems can transcend their current capabilities, fostering a new paradigm in scientific information management that is more efficient, insightful, and supportive of the research community's evolving needs.

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