

NAVIGATING AI USE IN CULTURAL HERITAGE

Balancing Innovation and Integrity

Artificial intelligence is reshaping industries, and cultural heritage is no exception. From predictive conservation tools to AI-generated labels and enhanced visitor experiences, the possibilities feel both vast and urgent. But in a field grounded in authenticity, interpretation, and long-term stewardship, AI also raises difficult questions: How do we ensure accuracy? Who decides what's appropriate? And how do we move forward without compromising mission or trust?

The Juxtaposition of AI in Conservation

Cultural Heritage conservation is built on methodological rigor, material honesty and reversibility. In practice, this means decisions are documented, interventions are justified and the evidentiary chain from object to treatment to record is treated as part of the object's history. Conversely, AI has a different set of defaults: probabilistic reasoning, pattern recognition at scale, and outputs that are often accurate in aggregate but opaque in derivation.

In a field grounded by long-term stewardship and authenticity, how do we ensure accuracy, and adopt without comprising trust?

Examples of AI Adoption in Cultural Heritage

AI is being used in cultural heritage spaces in a number of ways – from administrative tasks like daily business communications to comprehensive data analysis. For example,

- **Environmental monitoring:** Systems that integrate sensor data — temperature, relative humidity, light levels — and apply predictive modeling to anticipate deterioration conditions offer conservators actionable information earlier than traditional monitoring approaches.
- **AI-assisted condition analysis:** This is a more developing area, with meaningful potential for large or distributed collections where manual survey is resource-intensive. The critical constraint here is validation: any AI-generated condition finding should be treated as a flag for conservator review, not a conclusion in itself.
- **Collections management:** Object recognition, automated metadata generation and inventory support are reducing the administrative burden on conservation and collections staff in institutions that have piloted these tools carefully. The practical value is clearest in institutions managing significant cataloging backlogs, where AI can generate a working scaffold for human review rather than a finished record.

Navigating the Tension of AI Use

Before adopting any framework for AI use, it's important to note the specific challenges and considerations for conservators in cultural heritage.

- **Data sensitivity & ownership:** Integrating AI is complicated by culturally sensitive materials (e.g., sacred objects, human remains, repatriation-pending items) that existing data governance often fails to cover. Institutions must establish clear data governance policies regarding ownership and consent before high-resolution imaging or treatment records enter any AI pipeline.
- **Bias & authenticity:** AI systems inherit biases from historical collection data, which can automate or amplify outdated frameworks without critical review. Conservators must scrutinize AI-assisted reconstructions and imaging applications, clearly maintaining the distinction between a documented condition and a hypothetical result.
- **Operational & infrastructure constraints:** Most cultural institutions are not resourced for the demands of AI adoption, including costs for staff capacity, training, legacy database integration and ongoing model evaluation. Conservators should be direct about these constraints in procurement.
- **Explainability:** Conservation standards require that treatment decisions be traceable and justifiable. AI tools that provide opaque outputs without interpretable reasoning are poorly suited for the field, as they fail to meet the evidentiary standard required for documentation. The onus is on conservators to meet these standards independent of AI results.

Central to all of these is **automation versus human expertise**. AI tools offer efficiency gains that are attractive in under-resourced institutions, but the risk is that efficiency pressure gradually displaces human judgment from workflows where it remains essential.

A related tension point is **transparency versus proprietary systems**. Many AI tools operate on closed architectures that resist independent audit. Institutions that adopt mass market models, like ChatGPT, take on accountability for outputs they cannot fully evaluate. Where possible, preference should be given to systems whose methodologies are documented and whose outputs can be reviewed against known standards, such as custom institutional models.

Finally, **scale versus specificity** is a structural limitation. AI performs best on large, standardized datasets. Conservation collections are often small, materially heterogeneous and contextually specific in ways that general-purpose AI models are not designed to accommodate. As noted above, performance benchmarks from large-scale applications may not translate to specialized collection contexts, and institutions should require evidence specific to their use case before committing to adoption.



BEV/ART AI Use Disclosure: Image created with Canva AI Generator with a prompt "AI"

A Framework for Ethical AI Adoption

Several principles can guide institutions through AI adoption decisions.

- **Build cross-functional evaluation teams:** AI procurement decisions that exclude conservators, registrars and collections staff from the evaluation process are more likely to produce tools that fail in practice. The professionals closest to the collection are essential evaluators of whether a tool performs as claimed on real collection data.
- **Start with pilots.** Proof-of-concept implementations on bounded, lower-risk applications generate evidence that generalized vendor claims cannot provide. They also build institutional familiarity with AI systems in a context where failure is recoverable.
- **Require explainability as a baseline.** Any AI tool applied in a conservation context should be able to produce reasoning that a conservator can evaluate. If a vendor cannot demonstrate how their system reaches its conclusions, that is a disqualifying limitation for preservation applications.
- **Establish data governance before deployment.** Institutions should understand what data AI tools consume, how it is stored, who has access to it, and under what terms it may be used for model training or other purposes. These questions are easier to answer before adoption than after.
- **Document AI use in conservation records.** When AI tools contribute to condition assessments, treatment planning, or other conservation decisions, that contribution should be recorded with the same specificity as any other methodological input. Transparency in documentation is a professional standard that applies regardless of the tool being used.

Looking Ahead

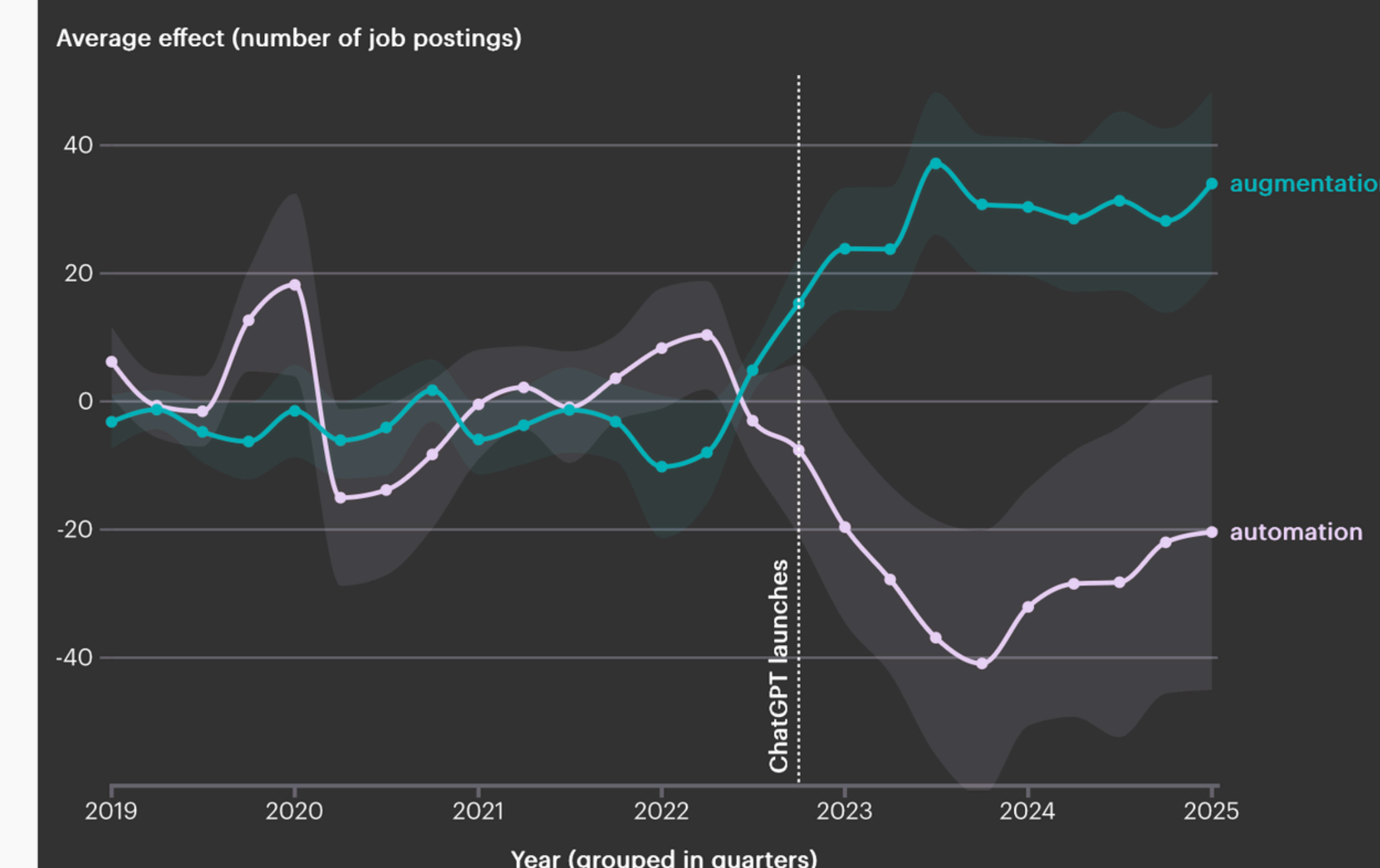
The trajectory of AI in the cultural heritage sector is toward broader integration and more sophisticated application. Shared standards, developed across institutions and in dialogue with affected communities, will be necessary to ensure that integration serves collections and the publics they belong to.

Research from Harvard Business School bears this out at the labor market level: following the launch of ChatGPT, demand rose for roles likely to be augmented by AI. Conservation, rooted in material judgment, contextual expertise and ethical reasoning, sits firmly in this category. The technology will not replace the conservator, it will extend what the conservator can do.

Conservators are well-positioned to lead in that conversation. The professional values that define conservation practice — material honesty, methodological rigor, long-term thinking, reversibility — are precisely the values that responsible AI adoption in cultural heritage requires. The field does not need to import an ethics framework from outside. It needs to apply the one it already has.

The asymmetric impact of generative AI

Researchers observed a drop in job postings for occupations highly exposed to automation following the launch of ChatGPT. At the same time, they noted a rise in employer demand for jobs likely to be augmented by AI.



Source: "Displacement or Complementarity? The Labor Market Impact of Generative AI," HBS Working Paper, August 2025. Harvard Business School Working Knowledge

AI is a powerful tool interpreter of data but it is not a substitute for conservator judgment.

“Two years ago, I thought the workforce would divide into “those who don’t use AI” and “those who do.” Now I see that’s wrong. In five years, everyone will use AI. The real divide will be between those who conduct their AIs to do better work — and those who outsource their thinking to it.”

Greg Shove, CEO, Section

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