REDUCING IMAGE HIDE AND SEEK WITH ARTIFICIAL INTELLIGENCE

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Most marketers and designers spend a lot of time (too much, in fact) searching for images, videos, design files and more.

Research by Hyland has shown that on average, people spend just under an hour every working day looking for content assets associated with their job. In 60% of the cases where an asset can't be found, it will be recreated. Both the time wasted looking for assets and the time and materials invested in recreating assets can add up and have a considerable impact on an enterprise's operating costs. We've heard estimates of as much as $30,000 to $50,000 for each asset that needs to be recreated.

SO WHAT CAN YOU DO ABOUT IT?

The thing is, finding what you're looking for assumes the image is searchable in the first place — and is tagged with the appropriate terms. Artificial intelligence (AI) can be useful to identify image attributes. And applying AI using machine learning (ML) models that can be trained on your specific business data can add real value by reducing tedious manual tagging while increasing search effectiveness.

In this paper, readers will gain an understanding of AI and ML, the current perception of what AI can do vs. reality, and how it can be used to assist with and work alongside human input to get the highest value out of enterprise-level digital asset management. By enabling the correct, consistent tagging of assets so that they can be found and used correctly, organizations can reduce image hide and seek.

CONTENT NEEDS TO HAVE CONTEXT

Recent research from Gartner has shown that many C-level executives consider content creation and management as a top-five vital capability for supporting their go-to-market strategies. Yet time and time again, organizations are hitting a major roadblock in their digital journey. This includes the ingestion, curation and digitization of unstructured data like images, video, audio, documents, etc.

While there is often a large investment in managing structured data — usually through some sort of enterprise content management (ECM) or other similar data management systems — unstructured data regularly goes undervalued, making it difficult to get necessary funding to support.

As a result, content ends up spread across multiple locations, in siloed systems, on employees' personal drives or as email attachments — making it almost impossible to locate. Even when tools such as digital asset management (DAM) platforms and federated search engines are used, they still need the content to be correctly tagged with consistent metadata.

Applying the right metadata can be a time-consuming and repetitive task when done manually, not to mention the steep learning curve for an individual to learn categories, brands, talent and other important descriptors.

Consider the example of a hotel chain that needs to categorize thousands of photographs taken of a new property to ensure that the right ones are displayed at the right place in online and print promotional materials. Someone will have to manually check each photograph and decide if it represents a guest room, bar, conference room, ballroom, etc. Even a well-trained eye may take 10 seconds or so to make that decision. And with thousands of images, that adds up. Plus, attention is bound to wander with such a repetitive task, leading to mistakes and inconsistent tagging (bedroom instead of guest room) that results in a lower level of quality. Most human-produced tags are only 80–85% accurate.

While there is a general acceptance of the importance of metadata, no one really wants to be responsible for applying it. Even with DAM and other content management systems (CMS) that have workflows to make metadata entry a required step when uploading an asset, the results are often minimal and inconsistent.

Paradoxically, the real value of an unstructured asset is only realized when more detailed and rich metadata is associated with the asset. The more you know about an asset and what it contains the more useful it becomes.

Consider an apparel manufacturer who may have one expert who can recognize and tag the clothes in a photograph. You then need another expert who can identify which models are in a particular photoshoot, yet another to identify which campaign a photoshoot was done for and then a photographer who can apply information on the shoot logistics.

That's a lot of people just to tag one image, and it takes a long time for each of those people to reach the level of professional and institutional knowledge where they can supply that information. Imagine trying to do that for thousands, or tens of thousands, of assets. It just doesn't scale.

As we discussed earlier, without the right metadata, it becomes almost impossible to find the right assets at the right time, leading to time lost in searching and in recreating them.

The sort of problems outlined above, where we need to automate repetitive tasks that need some degree of human intervention and specialist knowledge, are perfectly suited to the application of AI and machine learning.

ARTIFICIAL INTELLIGENCE

AI is commonly described as any computer or system that mimics cognitive functions such as learning and problem solving.

Current AI technologies include natural language processing, problem solving, autonomous vehicles, intelligent routing, image recognition and machine learning.

MACHINE LEARNING

Machine learning is regarded as a subset of AI that is based on the study of algorithms and statistical models that enable a computer system to perform specific tasks without needing explicit instructions. Instead, the system operates based on patterns and inference. Each time an ML process is run, the results can be used to validate the degree of accuracy and thereby learn. Practical results show that it only takes a surprisingly small number of training applications to produce results with 90+% accuracy.

This approach is ideally suited for solving complex content optimization problems, such as asset recognition and metadata application. Research has shown that for high-volume, low-complexity tasks, one AI bot can do the work of three to four full time employees. While AI can drive efficiency, the real power comes when bots and humans work together and there is a growing trust in the value and consistency of the results from the tasks that AI undertakes.

PERCEPTION OF AI

## "Any sufficiently advanced technology is indistinguishable from magic."

Sir Arthur Charles Clarke's Third Law (1973)

We all encounter AI in some form or another every day, whether it's voice assistants, mapping services or receiving personalized marketing messages or customized digital experiences based on our online behavior. Almost every enterprise is now using some form of AI in their day-to-day business operations as it becomes increasingly embedded within the tools and technologies they have deployed.

According to a recent Gartner survey of CIOs, the adoption of AI has increased by 270% over the last four years. AI is here to stay.

Yet there is still confusion around what AI is and can do. While we may use it (often unknowingly), most of us don't know how it really works. And and as a consequence, we often have unclear and unrealistic expectations. These perceptions are further clouded by vendors that overpromise on the capabilities of their AI-enabled products or use AI and ML as buzzwords but can't deliver on expectations.

AI and automation are traditionally leveraged to increase:
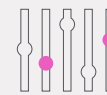
Scale	Speed	Personalization
Division of labor	Quality	Security

When you consider what AI, and ML in particular, are fundamentally designed to do — automate and assist with repetitive tasks that need some degree of human intervention and specialist knowledge —the benefits of their application become clear.

As a Forrester report outlines, "Investments in automation can drive one, two or all three of the following business goals: innovating with business technology, optimizing operations, and creating and acting upon advanced insights."

HOW AI CAN HELP DAM

Marketers are tasked with managing an explosive growth of content that is required to satisfy an increasing number of marketing channels. And many of these require specific and specialized formats, languages and variants on a global scale. They're increasingly making digital asset management the epicenter of their marketing content ecosystem.

For many years the key promise of DAM was that it helps organizations store and manage their assets in a central location where they can be easily found and retrieved. However, over time this promise has been diluted as assets continue to be stored and managed in disparate systems (often, large enterprises have multiple DAMs that don't communicate with each other) and have little or no metadata. New content types such as complex video and 3D models are often unsupported by older DAM solutions.

Bridging different content repositories and silos can be achieved using platforms that support the concept of federated search. To support that indexing, it is essential that the assets are accompanied by correct, relevant and consistent metadata.

This is where AI and ML can add real benefit in eliminating the frustrations and cost of looking for assets. The benefit and value out of AI is not just about knowing what questions to ask or what models to build. It comes from connecting AI with the right sources of data. And the value of machine learning comes from helping to build those data sources in the right way, at scale.

Automation technologies enable you to design processes on a scale that exceeds what is possible manually. ML can apply the right information at speeds that are impossible for a group of human subject matter experts to do manually, and in a consistent way.

There are two ways to approach such a task: using generic AI services or developing models that align to your specific business needs.

Generic AI services connect to a broad set of public services for common use cases (general classification, enrichment, OCR, speech-to-text, etc.) and use commodity models to provide those generic services. For instance, it may tag a particular vehicle as being a red pickup truck, but that is as detailed as it will go.

To drive real value, you need to train machine learning models on your content and data to get highly relevant insights and enrichments that enable specific business use cases across defined domains. Custom models deliver more meaningful outcomes for the business.

A custom model will be able to identify that red pickup truck as a 2022 Ford F150, and maybe even recognize which types of accessories have been installed.

The result is not about training the ML to perform a repetitive task, it's about developing a system where the output can be trusted by humans to deliver what they want, at the time they need it. From a DAM perspective, this means being able to locate the right image at the right time for the right use case.

CONNECTING TO THE DIGITAL SUPPLY CHAIN

With assets that have rich metadata models applied in a consistent manner, the business can use that information to connect with other systems across the digital supply chain. Correctly configured, an enterprise DAM can be more than just a tool used by the marketing department. It can be the connective tissue that unifies processes from product ideation through manufacturing, e-commerce, distribution and support while also delivering a consistent customer experience. The use of AI and ML with DAM helps surface newly formed insights that can play a crucial role in changing the speed of business.

Going back to the example of the apparel company we mentioned earlier, consider the following:

- Recognition of not just the clothing in a photograph but also any associated items (hats, bags, shoes, etc.), allowing for intelligent cross-selling on e-commerce platforms
- Recognition of the models used to go beyond just a name, but being linked to contracts, digital rights management
- Linking designs to materials libraries and sales information so you know when to order new materials based on an item's popularity

Thinking of the DAM as the center of the digital supply chain makes it more than just a place to store and retrieve media assets. It makes it a key platform for enterprise data strategy.

Organizations that have a clear data strategy with solid content platforms and pipelines will be able to operate more efficiently. Companies best positioned to deliver business benefits with AI- and ML-enabled metadata are those where the results are integrated into business systems and processes.

WHAT ABOUT BUSINESS-SPECIFIC AI?

In this era of content and data, AI can play a key role in delivering more value from existing and new information. Given that each organization's content and data requirements are unique, AI can predict, classify and enrich content to surface the information that is most important to a business. Beyond utilizing common, but generic, AI services, most organizations will benefit from developing their own custom and business-specific ML models that will better serve their unique business needs and data requirements.

Hyland's Nuxeo Platform offers two ways for companies to enrich and optimize their DAM processes:

- **Generic AI:** Connect to a broad set of public AI services for common use cases (general classification, enrichment, OCR, speech-to-text, etc.) where commodity ML models provide generic services.
- **Business-specific AI:** Train machine learning models on your content and data to get highly relevant insights and enrichments that enable specific business use cases across defined domains. Custom models deliver more meaningful outcomes for the business.

CONCLUSIONS

We've only just begun to scratch the surface of what AI can deliver. AI is not going to take away jobs. Instead, it will make many activities less mundane and more satisfying.

The desire for authenticity will see the rise of the cobot: Humans working in partnership with AI to produce quality services and products. AI will streamline processes and help with automation, while humans use their emotional intelligence to create meaningful content and experiences.

Learn more at **Nuxeo.com/DAM**

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