COMCAST TECHNOLOGY SOLUTIONS

Smart(er) TV

AI/ML and the future of Media Management

The Superfan goes digital

Superfans are the crown jewel of every content title. What if you had one on your team for every piece of content?

We're all passionate about different things; but the superfan takes "passion" to another level. You see it in action during sporting events and on social media. You may have gone to a convention that focuses on comics, sci-fi, or fantasy — with some specific intellectual property (IP) brands becoming so popular that they've sustained conventions and gatherings for decades. When it comes to the subject of their obsession, superfans are utterly brilliant data repositories. They can tell you so much more than what's seen onscreen:

- Specific details around when and where a movie was filmed, where an episode took place, when a game was played. They know the key players and contributors so intimately that they'll light up social media (and sometimes scorch it a bit). Thriving communities are built up of like-minded souls, connecting and turning trivia into meaning and relevance.

- The superfan can provide backstory and context that's deeper than anything that even the content creators could envision. They've done the research to add depth and meaning to what's being watched. Did you know that game was won by a player who experienced a major tragedy the night before? Did you know that this movie takes place in a fantasy world that started in literature? Ask a superfan — they can tell you.

- One of the most wonderful qualities of a superfan is their ability to build connections, correlations, and recommendations between content. New programs have succeeded solely on the merits of a loyal fan base following an actor from franchise to new project. A basketball player with heart and talent can bring fans with them to a new team or a new sport altogether. Superfans can steer you to engaging new experiences solely from their own deep understanding of what they love; not just actors and genres, but also more emotional components like tone, sentiment, and mood.

The introduction of machine learning into the video workflow is the first step at replicating and scaling the superpowers of the superfan. It's how media businesses can start building a foundational intelligence about their offerings that gains in utility the more it's employed.

Separating the Science from the Fiction

Artificial intelligence and machine learning are terms that are not only found together regularly, they're subject to lots of misunderstanding and misuse. It's not surprising given that some of our favorite stories involve computers that are smart enough to be either a trusted friend or a malevolent world-conquering network. Let's start with a basic understanding of how these two terms relate:

Artificial intelligence (AI) is a broad category of computer science that concerns itself with the development of technologies that can simulate our ability to think about problems and solve them.

Machine learning (ML) is a subset of AI that concerns itself with turning data into actionable knowledge. Algorithms are employed for a structured learning framework that uses historical data to achieve mastery of a specific domain (your content library, for example).

You can see how an AI system would utilize multiple ML algorithms in order to solve a lot of complex problems. You've probably interacted with this type of system; you definitely have if you've ever called up your phone's assistant by name and then successfully had a question answered.

For the purposes of video and media management, hopefully you're recognizing that the inherent value of a smarter workflow is moving out of ideation and into functional requirement for today's consumer market.

Making the case for smart(er) automation

It's an exciting time to be in any media business, whether you're a linear destination, on-demand app, or an advertiser looking to reach every screen.

That said, "excitement" also includes things like disruption, unpredictability, fragmentation — you get it. Aside from global events that cause a higher level of dependency on video and devices, it could be argued that screen-based devices have evolved faster than the media industries that serve them. It's time to change that. There are a multitude of reasons why an ML component is crucial for media management throughout and beyond the 2020s.

More to watch, and more watching

Consumers in the United States alone streamed 15 million years' worth of content in 2021, according to Nielsen's 2022 report. That's just part of the "more" story that businesses have to manage.

Video is no longer a timed event — it is ingrained into our daily life. For an increasing amount of the population, video is virtually an hourly consumption. Coupled to the increase in hours watched is the sheer volume of content that providers and streamers need to manage —a number that grows every day. A more intelligent system that can detect commonalities within a library can move more efficiently to categorize and group content based on specific criteria. Consumers then benefit from better ways to connect with the content they're looking for — or that they didn't know they wanted.

Complexity, commercials, and metadata

"Rich experiences" is a term that doesn't always mean "more bells and whistles." It also means more intuitive ways to connect with content.

Metadata is core to the ability for media businesses to function, which makes metadata management a cornerstone of today's media business. Content doesn't just need to move in real time; we're now in a time in which content often needs to be created in real time:

Live events and content need to be moved to an on-demand arena as soon as possible. A series of ML services can build experiences that can be accessed during or shortly after a live game or event, providing viewers with customized ways to get straight to what they want, whether it's a "highlights reel" of things they've missed or simply the ability to have content quickly showcased with thumbnails, summarizations, etc.

Contextual advertising that's complementary to viewing experiences is better for everyone — and that takes rich metadata. Content that connects consumers with like-minded advertising is much more prone to buying behavior. It creates a mutualism of benefit: campaign ROI improves, which elevates the value of advertising on a particular platform or destination, with the end result being an experience that makes viewers happier and more prone to keep watching.
To achieve this, advertisers rely on metadata provided by the consumer's viewing experience. Intelligent services that can create informative metadata for advertisers elevate media buys from a simple transaction into a more valuable partnership between advertiser and content destination.

Beyond advertising, technology that provides a superfan-level of contextual understanding about content paves the way for recommendation engines that go deeper than just genres and actors' resumes. Object-level recommendations make it possible to personalize experiences and playlists at a more granular level: Is a program with beaches and dogs being watched? Here are more choices with beaches and dogs. Furthermore, with the enriched metadata in hand, providers can link out to more information around specific assets, like many digital readers link out to more information around specific words (i.e., clicking on a word to open up definitions or even a shopping opportunity).

The very act of engaging with video is now introducing new layers of complexity that providers have to solve for. Interactive experiences are still quite nascent areas that have yet to be fully explored. Today we have streaming experiences with gaming or transactional components; but what about tomorrow?
What happens when viewing content gives the viewer opportunities to engage in real time with relevant products and social media connections within the program they're watching? There's got to be an intelligent system in place to grow those new connecting points with customers.

Profitability

AI/ML delivers value back to the organization in multiple ways, and it does it on both sides of the screen. The logical next step for the evolution of media management is to install a mechanism to understand content at a deeper level than just credits and run time. It's how to illuminate the most important asset of any media brand — its content.

ML captures more detailed datapoints within content and turns them into actionable knowledge that providers and advertisers can utilize in creative ways that they can choose. Just like the "superfan effect" in which other content is suggested because of its ties to a particular property (actors, directors, genres, etc.), a successful AI/ML service can create stronger correlations from top-tier content to other parts of your content library. It's a strategic, informed version of "a rising tide lifts all boats" — expanding the value of an entire catalog.

Operationally, a system that injects a learning component accelerates the continuous improvement loop that all businesses strive for. As more content is ingested and analyzed, and the business is able to amass a war chest of enriched metadata, a system that remembers contextual information at a deep level improves the ability to build experiences, make more effective suggestions to consumers, and provide advertisers with more focused targeting.

VideoAI: What we're doing with AI/ML

Our work in developing AI/ML for practical application for multiplatform video started with our need to manage content for our own businesses and consumers across essentially every type of screen/viewer interaction. The interoperability and interconnectivity between content providers, creators, and advertisers make it in everyone's best interest to adopt learning workflows that improve the flow of information across the industry.

"There's a lot of groundwork required in order to develop and implement an effective AI/ML solution in video instances," explains Kerry Zinger, Product Manager at Comcast Technology Solutions. "What really sets VideoAI apart is that we've got our focus placed not just on today's operations, or even tomorrow's; but also on where the technology and market are headed five, 10 years out. And we've got the resources to build VideoAI as a suite of services that evolve over time."

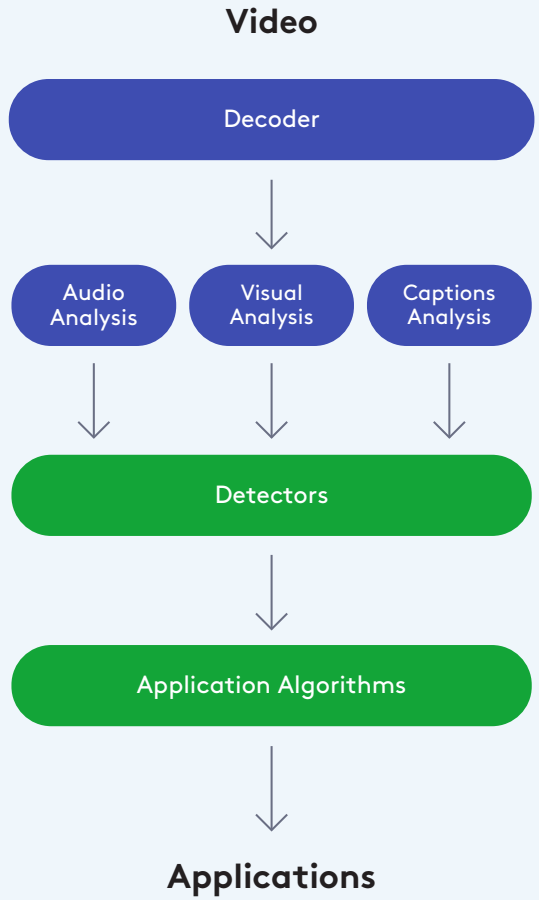
VideoAI — In a nutshell

VideoAI™ is a comprehensive framework of intelligent technologies that scrutinize video content — every word, action, component — to create actionable metadata that streamlines operations and improves content ROI.

Analysis of content components feeds data into a host of detectors: image, text, and logo detection, mood and sentiment identifiers, audio (and audio breaks), and more.

From that information, rich metadata is created and fed into a series of deep learning algorithms (rules-based, statistical, heuristics/domain-based) to be fed into applications created specifically for the needs of the business. The result is a much deeper dataset than what was previously possible, giving businesses the foundation for more personalized experiences across the board: enhanced recommendation engines, stronger context between content items, and contextual advertising at asset, segment, or even scene levels.

Zinger continues, "As the VideoAI framework ingests more and more content, you have more and more datapoints from which businesses can build new tools, things we haven't specifically considered. The enriched metadata provides a wealth of information that gets stored and utilized through brand-new products. These are advancements that can be brought about more effectively than anything that existed previously, and as the metadata increases, it's really up to each media operation how its power can be leveraged."



VideoAI: Your SaaS-Based Superfan

Comcast Technology Solutions designed VideoAI as a software-as-a-service (SaaS) solution specifically built for media and entertainment applications. Together with the Cloud Video Platform in our Direct-to-Consumer Suite, VideoAI lays the foundation for more engaging user experiences, simplified management and publishing, and stronger content monetization. Already employed with providers like Sky and NBCU, the open-ended nature of the VideoAI framework makes it not just a workflow element that gets smarter over time, but a sandbox of intelligent tools where new ways to connect can be invented.