



GENERATIVE AI & ENTERTAINMENT

How a revolutionary technology will transform
the worlds of TV, film, music and gaming



AN INNOVATION SO EXCITING IT'S TOUGH TO STAY OBJECTIVE

When Variety Intelligence Platform released its first report on AI, titled, “Artificial Intelligence & Media,” in October 2020, I was concerned we might be putting too much focus on a small-bore subject. Little did I realize we were just ahead of our time.

Nearly three years later, we revisit the subject at a time when it couldn't be any hotter. Generative AI is all people are talking about these days, and the con-

versation extends far beyond media. It's abundantly clear this nascent technology presents a revolutionary development with the potential to change the world as we know it. I get nervous writing a sentence like that because I fear overhyping gen AI. VIP+ prides itself on not drinking the Kool-Aid on the tech sensation du jour, and we've been appropriately measured in our coverage of the last big thing — the metaverse and other Web3 phenomena. Seeing how the excitement

there has given way to a more sobering reality validates that tempered approach.

But when it comes to gen AI, it's difficult to stay measured. The potential is too obvious and profound. That said, I thought it was important in this report to stay narrowly focused on what gen AI means to the entertainment world. On that alone there is much to say — so much, in fact, I can tell you that VIP+ is already hard at work on a sequel to this report that will be released in May.

It's just another way of VIP+ staying true to its core mission: Digging deep on the topics that matter most to media and tech industry professionals.

Andrew Wallenstein
President and Chief Media Analyst, VIP+

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INTRODUCTION

The term “Cambrian explosion” has been commonly used in reference to the massive potential of Web3. We are now hearing it again, this time in reference to generative AI technology. Generative AI is fast supplanting Web3 and the metaverse in venture capital, technology and media circles as well as the broader public consciousness and cultural imagination. Emergent generative AI tools — such as ChatGPT, DALL-E, Stable Diffusion and Midjourney — have seen extraordinary user-adoption surges at a pace unseen by other recent platforms in the relatively brief

history and evolution of the internet over the past 30 years.

While the models underlying these tools have actually been in development for years, moves to open-source them and release APIs by technology and artificial intelligence companies including OpenAI and Stability AI have spawned an expansive ecosystem of generative AI startups and user software applications.

These systems offer up a plethora of use cases, launching fevered speculation about the transformative and disruptive potential of AI to change, upend or slowly erode internet-based media and tech business

models, organizations, labor forces, roles, functions and workflows. The capabilities of generative AI are vast and potentially far-reaching. Still only months removed from the first release of these tools, the full spectrum of ramifications for the entertainment industry is yet to be understood.

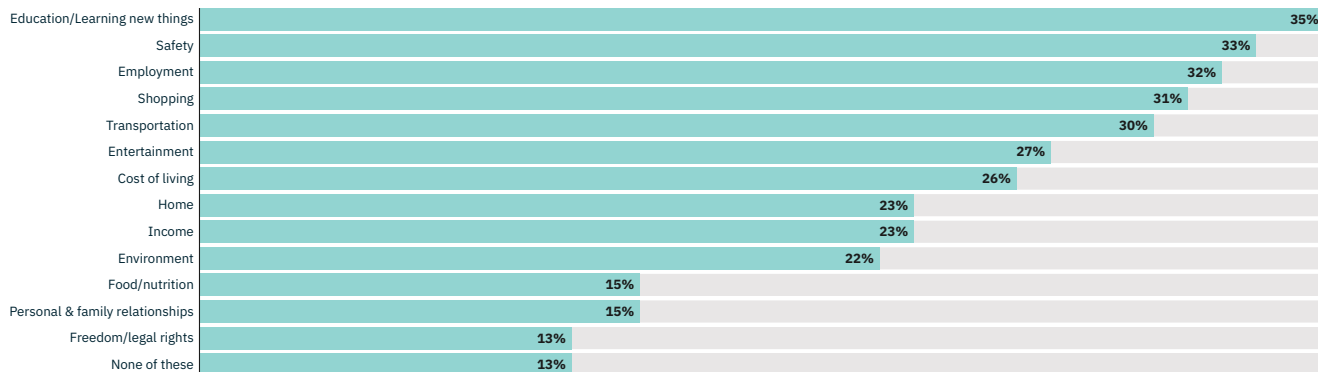
This report is an early attempt at doing just that, as we examine the groundbreaking generative AI tools already being used in media and the entertainment production pipelines and theoretical applications still ahead. As generative AI inserts itself into human creative processes, we'll also unpack the fraught question of whether

and how disruption by this technology will enhance human creative capabilities and productivity, and in what instances its entry might automate away or de-emphasize certain manual job functions and fundamentally change human skill sets.

Generative AI software will almost certainly influence creative roles throughout entertainment's supply chains, broadly cutting across film and TV, gaming and music: scriptwriters; concept and VFX artists; set and costume designers; screen and voice actors; musicians, composers, sound designers and editors; game programmers and more.

Areas AI Expected to Impact Most

Survey Q: Which do you anticipate changing most for you in the next 3-5 years because of increased AI use?



SOURCE: IPSOS; NOTE: SURVEY CONDUCTED ONLINE AMONG THOSE AGED 16-74 BETWEEN NOV. AND DEC. 2021 ACROSS 28 COUNTRIES

What Is Generative AI?

Generative AI is a category of artificial intelligence that uses deep learning models capable of generating new outputs based on large amounts of input data. These software applications are already able to produce or manipulate language (text and code), images (2D and 3D models), audio (music and voice) and video. Their underlying models have been trained on vast data sets, the largest of which have typically been scraped from available or public domain material on the web, whether text, images, code, voice, music or video.

Generative AI software now creates content in any conventional media format, given relatively minimal human prompting or additional inputs at the point of creation. These models can also translate source inputs from one format into another, for instance enabling natural language text prompts to produce not just additional text but images and video.

The ultimate direction these models appear to be building to is a state of “text-to-everything,” with text prompts capable of deriving any conceivable format output. Generative AI applications fall across a few modalities and

now enable the following outputs to be created from various prompts or inputs:

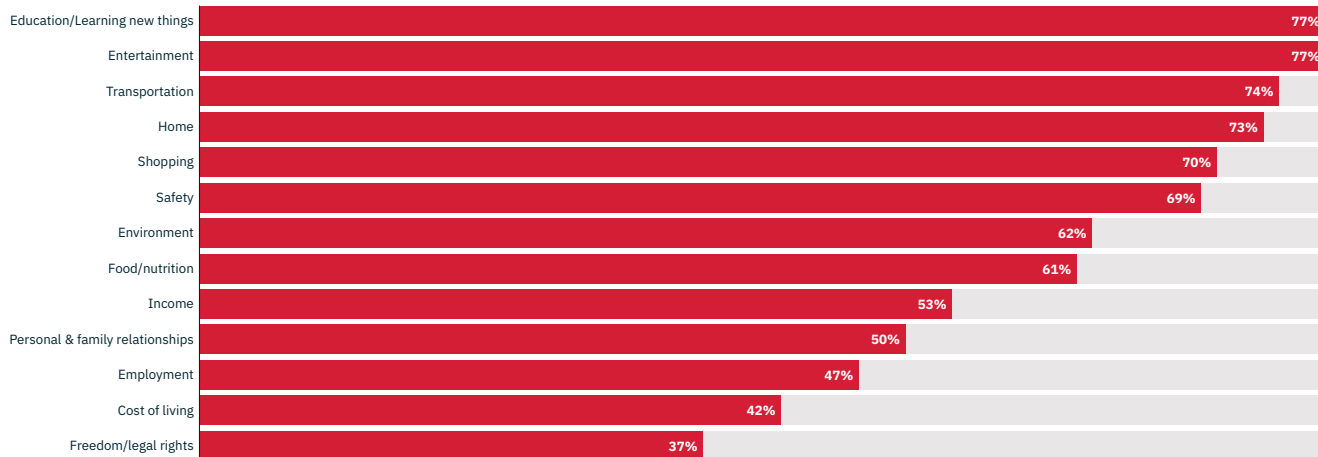
- **Text:** Creates written content given a natural language prompt.
- **Code:** Suggests code autocompletions given a natural language prompt or code context.
- **Image:** Creates or modifies images given a text prompt or image(s).
- **Voice:** Creates, mimics or modifies speaking or singing voices given an existing spoken audio or video file and script text.
- **Music:** Creates melodies or sound effects given specific preset

selections or autocompletes musical compositions given existing recorded audio.

- **Video:** Creates or modifies video given a text prompt, image or existing video footage.

Existing or potential applications are wider reaching than creative or artistic purposes. Large language models (LLMs) underlying generative applications like ChatGPT are the same models enabling customer-service chatbots capable of interactive conversation. Some models are used to model chemical and protein molecular structures

Areas Expected to Improve Because of AI



SOURCE: IPSOS; NOTE: SURVEY CONDUCTED ONLINE AMONG THOSE AGED 16-74 BETWEEN NOV. AND DEC. 2021 ACROSS 28 COUNTRIES

to enable drug discovery and image analysis for medical diagnosis.

Although researchers have been working on these models for years, we are still just months since the first application was released. A confluence of factors has enabled generative AI tools to become so powerful, to produce high-quality coherent outputs and finally emerge for public use: (a) access to vast amounts of data with which to train models, (b) the open sourcing of APIs of certain foundational models

by developers including OpenAI and Stability AI and (c) sufficient computing power required to run large models. These models have rapidly improved and will keep advancing in leaps, generating quality outputs approaching, reaching or maybe surpassing human-level standards and capabilities.

The landscape of companies actively developing generative models most prominently includes well-funded startups and research organizations like OpenAI, Stability AI, Hugging Face,

Cohere, AI21 Labs, Anthropic and Mid-journey; and big tech, including NVIDIA, Meta, Google, Amazon, and Salesforce. The development of these models have led to two concurrent trends:

1. Startups are proliferating and bringing new applications to market as they build specialized models upon large “foundational” models fine-tuned for specific content domains or business uses. Some expect startups eventually to build on top of each major

foundational model, driving a surge in startup activity. Already, OpenAI’s GPT-3 language model has encouraged an ecosystem of hundreds of companies offering generative AI tools across a variety of utilizations. While this ecosystem will significantly reduce as companies fail, some have already found market niches and use cases that could prove resilient. Among them, AI startups are offering creative tools for synthesis or editing across text, image, audio and video.

2. Tech companies are integrating generative capabilities into existing user-facing tech, with several examples recently emerging and more sure to follow. Microsoft integrated OpenAI's GPT-4, the latest and largest scaled version of its LLM, into Bing search — adding a question-answering chatbot called Bing Chat — and more recently Microsoft Word, Excel and PowerPoint with a set of AI-powered productivity features dubbed Copilot. Spotify beta-launched an OpenAI-powered personalized “DJ” that uses a synthesized voice to narrate a curated playlist. TikTok added a basic text-to-image “greenscreen” to create backgrounds for user videos. YouTube plans to integrate generative AI tools for creators to use in their videos, and Roblox announced plans to add the ability for game developers to create assets from text prompts and autocomplete code.

How Will Gen AI Be Used in Media & Entertainment?

Generative AI tools have proliferated, offering a number of capabilities or modalities for media and entertainment use cases. AI-generated outputs have foreseeable uses across virtually every distributed media type, including text, image, video and audiovisual (film, TV, games, social) and audio (music, podcasts, radio, audiobooks).

With the addition of generative AI, what changes is how creative work is produced. At this early stage, we do our best to predict or reasonably imagine

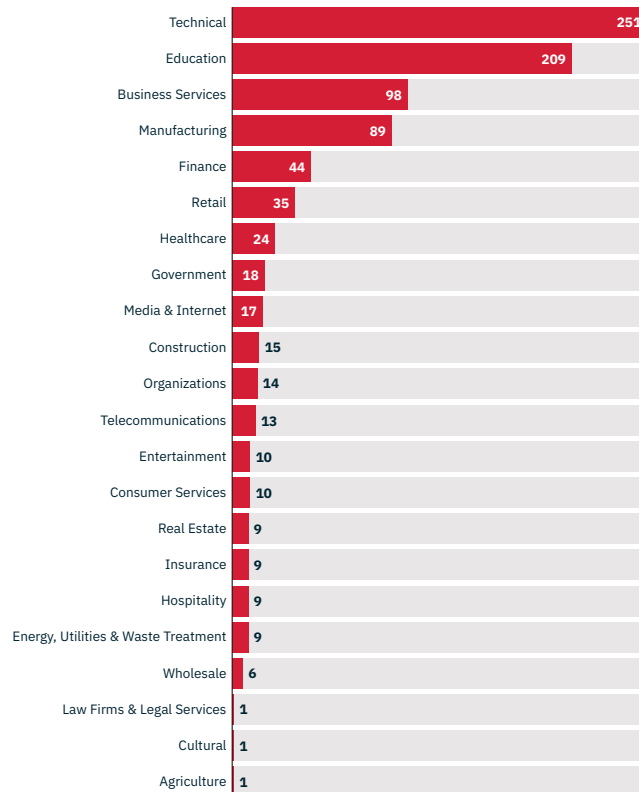
how these tools will be applied in film and TV, gaming and music production pipelines as the technology improves over the coming months and years. In the process, it will transform the content we create and consume; creative roles, workflows, processes and skill sets; media business models and operations; and the meaning, nature and value of art and human creativity.

Out of all this, we ask ourselves three core questions:

1. How might AI be introduced to and begin to operate within larger production workflows?
2. How might AI unlock growth as it supercharges and streamlines creative productivity, significantly reducing time and cost to produce and scale output?
3. How might AI either increase or diminish talent opportunities as it absorbs some creative tasks?

We do note that AI is being more broadly used in media and entertainment in a number of other ways, which aren't by strict definition applications of generative AI, as that requires producing a novel output. Most recognizably, machine-learning AI enables personalized content recommendations, content moderation and sentiment analysis, though AI can also be directed for certain non-generative production uses like transcription and closed captioning, object tracking, rotoscoping and greenscreening.

Number of Companies Using OpenAI in the U.S. by Sector



SOURCE: ENTERPRISE APPS TODAY