

IDC MarketScape

IDC MarketScape: Worldwide General-Purpose Computer Vision AI Software Platforms 2022 Vendor Assessment

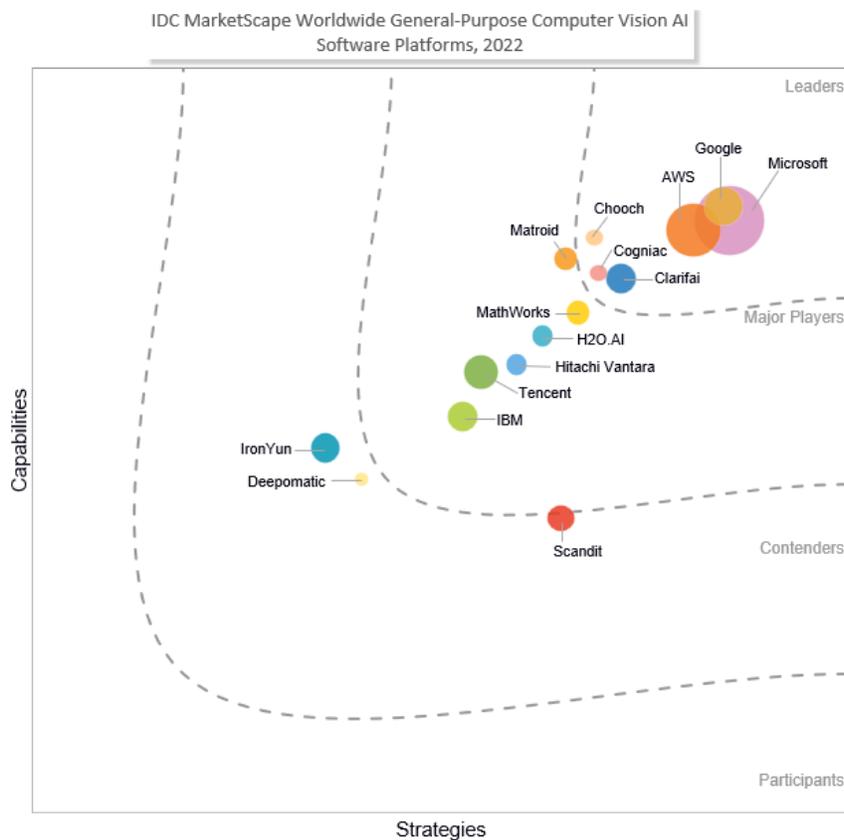
Matt Arcaro

THIS IDC MARKETSCAPE EXCERPT FEATURES MICROSOFT

IDC MARKETSCAPE FIGURE

FIGURE 1

IDC MarketScape Worldwide General-Purpose Computer Vision AI Software Platforms Vendor Assessment



Source: IDC, 2022

Please see the Appendix for detailed methodology, market definition, and scoring criteria.

IN THIS EXCERPT

The content for this excerpt was taken directly from IDC MarketScape: Worldwide General-Purpose Computer Vision AI Software Platforms 2022 Vendor Assessment (Doc # US49776422). All or parts of the following sections are included in this excerpt: IDC Opinion, IDC MarketScape Vendor Inclusion Criteria, Essential Guidance, Vendor Summary Profile, Appendix and Learn More. Also included is Figure 1.

IDC OPINION

The human vision system, which gathers and interprets information through sight, remains a critical aspect as part of one's life as both a consumer and an employee (i.e., working as part of a private business or government entity). Vision is critical to performing routine tasks like navigating roadways and sidewalks; identifying, classifying, and interacting with objects and environments; and engaging with computers and digital devices. Human vision continues to develop and be fine-tuned by technology to support an ever-increasing range of dynamic events and human experiences. Yet, as our society continues to invest in R&D to advance and deploy new technology and automation techniques, there are increasing opportunities for businesses and consumers to leverage or pair (i.e., in a cooperative or human-in-the-loop manner) human sight with computer-driven sight (referred to as computer vision [CV] or computer vision artificial intelligence [CV AI]) to take the next step in delivering improved productivity, efficiency, safety, sustainability, and inclusivity.

CV has been a strong beneficiary of academic and commercialization investments to advance the fields of deep learning- and machine learning (ML)-based approaches to AI. These advancements, which have largely occurred over the past five years, look to abstract the human intelligence schema and system to interpret unstructured data in the forms of images, videos, and sensor data (e.g., radar, lidar) through complex neural networks. To develop this neural network architecture, CV technology user organizations require massive amounts of use case-specific or even generalizable training data, as well as extensive computational resources (including GPUs, TPUs, and hardware- and software-based accelerators) to train, build, and validate models that can "learn" details and characteristics from new, unstructured visual-based inputs. This approach to solving CV AI has led to breakthroughs where computers are now able to surpass the quality and efficiency of humans for multiple discrete use cases, along with delivering differentiated benefits versus humans in the areas of scale, repeatability, longevity, attentiveness, and subjectivity (to name a few).

Although deep learning-based CV is a very new technology area, IDC has seen tremendous progress in its use by organizations of all sizes and across all verticals. This includes support for (or even potentially enabling new) business and consumer use cases that can deliver insights in the areas of:

- Anomaly detection
- Augmented reality/virtual reality (AR/VR) applications
- Assembly line automation
- Asset predictive maintenance
- Digital twins
- Facial recognition and detection
- Fraud detection
- Geospatial analysis and analytics

- Health and safety compliance
- Identity and access management
- Intelligent document processing (IDP)
- Inventory management
- Media analysis and compliance
- Medical imaging
- On- or off-road autonomous/automated driving
- Optical character recognition (OCR)
- Process and task automation
- Roadway compliance, optimization, or tolling (e.g., registration, speed, parking)
- Security and facility management
- Sentiment analysis
- Shopper analytics
- Visual inspection and quality control

This IDC MarketScape focuses on one aspect of the CV ecosystem, CV software platform providers. These essential vendors make up the foundation of growth and potential of CV, and they enable customers to understand, experiment, develop, train, validate, deploy, and manage CV models for a near-infinite list of potential use cases. These providers are critical to helping customers extract the complexity of working with, utilizing, and managing CV deployments, as well as helping them understand how cutting-edge AI research techniques and approaches equate ultimately to business value. In many cases, these providers offer different low-code and no-code user interface/user experience (UI/UX) options to support organizations with a mix of potential user personas ranging from AI/ML technical specialists (e.g., data scientists, ML engineers) to traditional IT personnel (e.g., developers and computer programmers) and even line-of-business users (e.g., payroll and accounting staff).

As part of this IDC MarketScape process, IDC spoke with dozens of end-user organizations that are investing in CV platform providers to help them develop and deploy applications. These organizations, which all varied in terms of CV deployment maturity, were almost universally aligned on the tangible, business benefits provided by these CV solutions, as well as (more importantly) recognized that they should have prioritized and invested in CV earlier. These conversations reinforce the need for organizations (broadly) to think through how CV can be used to improve business, consumer, and partner interactions and capabilities both at a strategic, governance level and at a specific use case level.

IDC MARKETSCAPE VENDOR INCLUSION CRITERIA

The criteria used for the selection of IT suppliers that were evaluated included the following:

- The provider's CV platform offering must have been commercially available to customers for purchase no later than January 1, 2021.
- The provider's CV platform offering must be available to customers to use on a worldwide basis.

- The provider's CV platform offering must be sold as a "horizontal" or support at least three of the following verticals:
 - Construction
 - Education
 - Engineering and business management services
 - Financial services
 - Government
 - IT, computer, software, or internet-related services
 - Life sciences
 - Manufacturing
 - Media and entertainment
 - Personal and consumer services
 - Real estate and legal services
 - Retail and wholesale trade
 - Telecommunications
 - Transportation and roadway management
 - Utilities, energy, and mining
- The provider's CV platform offering must support ingestion, annotation, and inferencing of images and video.
- The provider's CV platform offering must support customers needing to train and deploy customized vision models.
- The provider's CV platform offering must have active, paying customers in more than one geographic region.
- The provider's CV platform offering must have 20+ active and paying customers in production as of January 1, 2022.
- The provider's CV platform offering should be primarily based on their own intellectual property (IP).

ADVICE FOR TECHNOLOGY BUYERS

IDC offers the following advice to technology buyers considering CV:

- **Engage with stakeholders from multiple organizations to identify and prioritize CV use cases.** In IDC's discussions with CV providers and customers, we have realized that the people and process side of a CV solution is as critical if not more critical than the technology development and deployment side. Organizations need to build sufficient inroads across multiple internal organizations to identify their more important CV use cases. This evaluation and understanding must go beyond just considering a use case's ROI (although that is critical) to include operational requirements, use case complexity, use case maturity and ecosystem support, technology resources available, deployment environments, and life-cycle management requirements.
- **Understand that no two CV platform providers are the same.** At this point in the development of the CV software platform provider market, there remain multiple, heterogeneous capability approaches and go-to-market strategies that need to be considered as part of your provider

evaluation. This includes evaluating providers on attributes including use case support, available native integrations, channel/partner provider availability and road map, pretrained model availability, the expected (technology buyer) resource requirements, and support for different employment environments.

- **Evaluate the level of AI/ML abstraction that best aligns with your organization's strategy.** IDC's research shows that at this point, organizations are not yet prepared to standardize on a single CV platform provider, and instead prefer to potentially work with a small list of providers aligned to specific use cases or domains. This reinforces the need for organizations to think through provider solution support at the targeted use case level for now. For example, an organization that intends to have a line-of-business managed use case will want to prioritize providers that have designed a full-suite, end-to-end workflow for nontechnical users. IDC expects that as this market matures (which is happening rapidly already), there will be an opportunity for organizations to standardize on a single provider.
- **Experiment with CV in a low-effort, repeatable way.** Organizations new to CV often lack the foundational rigidity to sufficiently design and develop a CV solution at scale without experience/trial and error. Instead, IDC recommends that organizations work with one (or even multiple providers) in a curated, proof-of-concept, or trial-based structure to ensure that the proper governance, process alignment, and technology expertise foundation can be designed and built up front. IDC also recommends that organizations look to leverage pretrained model libraries (when available) to improve model development and validation pipelines.

VENDOR SUMMARY PROFILES

This section briefly explains IDC's key observations resulting in a vendor's position in the IDC MarketScape. While every vendor is evaluated against each of the criteria outlined in the Appendix, the description here provides a summary of each vendor's strengths and challenges.

Microsoft

After a thorough evaluation of Microsoft's strategies and capabilities, IDC has positioned the company in the Leaders category in this 2022 IDC MarketScape for worldwide general-purpose computer vision AI software platforms.

Microsoft offers a wide range of services and tools for technology buyers looking to build, customize, and deploy CV AI across a global footprint. Microsoft's strategy and vision begin with an ethos of providing tools, capabilities, and services that allow each user profile to access CV and AI in the manner that they want. Microsoft wraps this strategy with three main focus areas that it uses to drive current and future R&D. First, Microsoft develops solutions that continue to bring cutting-edge AI research to customers. Second, Microsoft ensures that its platform is built to support mission-critical use cases and deployments. Third, Microsoft makes responsible AI, defined as inclusive, fair, transparent, accountable, reliable, safe, private, and secure at the center of all its AI activities. Microsoft's CV strategy to date has been extremely successful as customers are utilizing its capabilities to design, build, and deploy solutions that deliver tangible business value.

Microsoft's current CV portfolio mirrors that of other cloud service providers, as it consists of a three-tiered strategy of Azure AI, Azure Cognitive Service, and Azure Applied AI Services. Azure AI consists of the infrastructure building blocks and frameworks that underpin all the higher-level services created by Microsoft. Azure Cognitive Services represents Microsoft's primary CV service layer and contains a portfolio of prebuilt models (accessible via APIs) as well as an end-to-end CV model development and

deployment platform for customers. Azure Applied AI Services represent areas of investment by Microsoft to build out domain or task-specific AI solutions (e.g., Azure Form Recognizer for IDP). In addition to these focus areas, the Microsoft team has ensured that its portfolio supports multiple user personas from data scientists and ML engineers to developers and line-of-business users with a low-code/no-code UI/UX.

The Microsoft team fully understands that the business value of CV comes from its ability to be integrated into business processes and applications. In addition to the extensive ecosystem of service providers and ISVs that it has enabled on its platform to help customers, and programmable APIs for developer engagement, Microsoft has worked to empower line-of-business users to integrate CV into other Microsoft products via its no-code Power Platform suite (Power Apps, Power Automate, Power BI, Power Virtual Agents).

Strengths

- **Commercializing the cutting edge.** Microsoft has a long track record of embracing innovation and turning concepts and capabilities from its research team into commercial products and services. Microsoft's efforts around CV follow this strategic mold and include efforts to push the boundaries in synthetic data, multimodal AI, and XR (i.e., AR/MR/VR).
- **Trustworthy AI.** Microsoft's ethos to define and implement Responsible AI as a key tenant of the company's AI and CV strategy goes a long way to reassure customers to embrace AI. Microsoft has also shown that the tenant of responsible AI continues to be reviewed by its team and it isn't afraid to make changes to its policies based on updated findings or customer feedback (e.g., Microsoft announced it was phasing out emotional detection AI from its platform in June 2022).
- **Customer and partner ecosystem.** Microsoft's experience and productivity suite have an extensive user base across most industries, as well as a global footprint of partners, service providers, and ISVs to provide support and additional capabilities on top of its services. Microsoft has made it an extremely low-effort activity for customers to experiment, adopt, and scale its CV offerings.

Challenges

- **Domain- and industry-specific solutions.** Microsoft's portfolio of solutions focused on specific industries or use cases (i.e., Azure Applied AI Services) is more limited.
- **Embracing customer feedback.** Customers indicated that the Microsoft team was less responsive in addressing their feedback on issues with CV functionality, as well as requested feature and capability enhancements.

Consider Microsoft When

Microsoft's comprehensive portfolio and strong strategic direction make it a vendor of strong consideration for any organization looking to experiment, learn, or expand its use of CV and AI more broadly:

- **Should Microsoft be considered for global deployments?** Yes, Microsoft can support global, regional, or in-country deployments on a global basis.
- **Should Microsoft be considered for businesses of all sizes?** Yes, Microsoft can address CV needs from small businesses to enterprises.
- **Should Microsoft be considered by all verticals looking to deploy CV?** Yes, Microsoft's portfolio of software, services, and support can be applied to all industry verticals.

APPENDIX

Reading an IDC MarketScape Graph

For the purposes of this analysis, IDC divided potential key measures for success into two primary categories: capabilities and strategies.

Positioning on the y-axis reflects the vendor's current capabilities and portfolio of services and how well aligned the vendor is to customer needs. The capabilities category focuses on the capabilities of the company and product today, here, and now. Under this category, IDC analysts will look at how well a vendor is building/delivering capabilities that enable it to execute its chosen strategy in the market.

Positioning on the x-axis, or strategies axis, indicates how well the vendor's future strategy aligns with what customers will require in three to five years. The strategies category focuses on high-level decisions and underlying assumptions about offerings, customer segments, and business and go-to-market plans for the next three to five years.

The size of the individual vendor markers in the IDC MarketScape represents the market share of each individual vendor within the specific market segment being assessed.

IDC MarketScape Methodology

IDC MarketScape criteria selection, weightings, and vendor scores represent well-researched IDC judgment about the market and specific vendors. IDC analysts tailor the range of standard characteristics by which vendors are measured through structured discussions, surveys, and interviews with market leaders, participants, and end users. Market weightings are based on user interviews, buyer surveys, and the input of IDC experts in each market. IDC analysts base individual vendor scores, and ultimately vendor positions on the IDC MarketScape, on detailed surveys and interviews with the vendors, publicly available information, and end-user experiences to provide an accurate and consistent assessment of each vendor's characteristics, behavior, and capability.

Market Definition

IDC defines a computer vision (CV) software platform as a set of commercialized software tools and technologies that enable customers to design, train, build, validate, deploy, and manage CV artificial intelligence/machine learning (AI/ML) models. These models, when deployed, can derive data-based insights and inferences from unstructured images, videos, and/or sensor data (e.g., lidar, radar, hyperspectral).

General-purpose software platforms are defined as platforms purposely designed to support the broadest range of potential use cases. Although these platforms may contain specialized functions and integrations for a given domain, vertical, or use case, these general-purpose platforms should include capabilities that can broadly address or be applied to most, if not all, use cases.

LEARN MORE

Related Research

- *Worldwide Computer Vision AI Software Tools and Technologies Market Shares, 2021: Strong Market Growth Paired with Persistent Supplier Fragmentation* (IDC #US49569422, August 2022)
- *Worldwide Computer Vision AI Software Tools and Technologies Forecast, 2022-2026* (IDC #US49261222, July 2022)
- *Worldwide Intelligent Document Processing Market Shares, 2021: Modernizing Process Workflows* (IDC #US47774022, June 2022)
- *Worldwide Intelligent Document Processing Forecast, 2022-2026* (IDC #US47773922, June 2022)
- *IDC Market Glance: Computer Vision AI Software Tools and Technologies, 4Q21* (IDC #US47737021, October 2021)

Synopsis

This IDC study represents a vendor assessment of the computer vision (CV) AI software platforms market for general-purpose use cases leveraging the IDC MarketScape model and assessment methodology. This assessment discusses both quantitative and qualitative characteristics that provide guidance about a CV platform vendor's offerings and strategy. This IDC MarketScape covers a variety of vendors participating in the CV AI software platforms market and focuses on providers supporting a wide variety of use cases and industry verticals. This IDC MarketScape evaluation is based on a comprehensive and rigorous framework that assesses vendors relative to the criteria and to one another. This study aims to highlight the factors expected to be the most influential for success in the market in both the short term and the long term.

"This IDC MarketScape study helps reinforce CV AI's potential to drive innovation and business value to worldwide organizations," said Matt Arcaro, research director, Computer Vision AI Tools and Technologies. "Although CV AI is largely a new technology field, platform providers continue to develop and deliver new functionalities and capabilities that allow organizations to apply the technology in new and exciting ways."

About IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications and consumer technology markets. IDC helps IT professionals, business executives, and the investment community make fact-based decisions on technology purchases and business strategy. More than 1,100 IDC analysts provide global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries worldwide. For 50 years, IDC has provided strategic insights to help our clients achieve their key business objectives. IDC is a subsidiary of IDG, the world's leading technology media, research, and events company.

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