



Cogniac Recognized the

2021

Entrepreneurial Company of the Year

Global

Computer Vision Industry

Excellence in Best Practices

Best Practices Criteria for World-Class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each award category before determining the final award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. Cogniac excels in many of the criteria in the AI computer vision space.

AWARD CRITERIA	
<i>Entrepreneurial Innovation</i>	<i>Customer Impact</i>
Market Disruption	Price/Performance Value
Competitive Differentiation	Customer Purchase Experience
Market Gaps	Customer Ownership Experience
Leadership Focus	Customer Service Experience
Passionate Persistence	Brand Equity

Highly Configurable Computer Vision Applications Drive Commercialization Success

Sparked by the advancement of digital technologies, artificial intelligence (AI) emerges as a pillar of digital transformation that unlocks a plethora of possibilities for businesses worldwide. In particular, computer vision garners considerable interest, and funding from a comprehensive range of industry verticals places the technology at the center of AI research initiatives. The automotive, aerospace, pharmaceutical, and electronics sectors, for instance, have varied parts verification, assembly, and packaging demands. AI-powered computer vision systems can help collect various product images from manufacturing operations worldwide and compare, contrast, and analyze these images for changes in

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- Riana Barnard, Best Practices Research Analyst

product quality. It has the potential to predict future product quality issues by clearly identifying product anomalies if any exist. Businesses increasingly recognize computer vision as a key driver for improving quality control measures in the industrial environment. In addition, computer vision applications extend beyond manufacturing to include field equipment inspection, traffic monitoring, health sciences, and precision agriculture.

However, the commercialization of computer vision technologies is limited. Use cases showing impressive

potential in pilots fail when trying to scale efficiently to support commercial deployment. Frost & Sullivan believes the issue lies within the business model enterprises use when implementing computer vision and, in part, within the approach used by the companies developing the technology. Also impeding the success of computer vision applications is the disconnect between operational and development teams. Developers building computer vision applications often do not clearly understand employees' needs and challenges, which results in operationally unfeasible applications. Moreover, companies do not necessarily employ qualified teams capable of designing computer vision applications from scratch.

Frost & Sullivan's independent research highlights additional pain points:

- Every computer vision system setup is unique, and vendors must customize solutions based on specific business or product types. Therefore, mass deployment of these systems is not plausible. With low mass deployment and low reusability, monetization rises as a critical challenge for the computer vision industry.
- Image processing algorithms are crucial in the evolution of computer vision systems. These algorithms need to evolve constantly, and there is still much room for improvement.
- The majority of computer vision participants currently only focus on providing solutions to mass manufacturers without paying enough attention to small-scale and small-series producers.

In this market scenario, computer vision and AI applications seem too complex and time- and cost-ineffective to provide a positive return on investment. Even though several off-the-shelf AI solutions surface, allowing companies to seamlessly integrate and implement computer vision applications into their workflows, these solutions prove ineffective for many users because of their limited possibility of customization that restricts their ability to address clients' bespoke needs. As a result, these pre-trained

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**- Deepu Nair, Senior Industry Analyst:
ICT**

generic computer vision systems work only on the surface level and lack the depth of operational understanding needed for mission-critical applications. As applications become increasingly demanding, features constituting the computer vision ecosystem (i.e., higher resolution, higher data bandwidth, a longer distance of data transfer, higher dynamic range, and flexibility in optics, data interface, and other accessories) are also becoming all-important. Frost & Sullivan anticipates that companies who successfully develop easily deployable, cost-effective, yet highly customizable computer vision solutions will take the

lead by enabling widespread commercial adoption across industries.

Entrepreneurial Innovation and Customer Impact of Cogniac

Founded in 2015, Cogniac develops technology solutions for visual task automation. Focusing on key markets (e.g., the manufacturing and industrial sectors), which can be error-prone in tasks involving humans, this California-based company's enterprise-grade platform for AI visual observation allows

customers to connect sources such as machine vision cameras, security cameras, drones, and smartphones. This capability enables businesses to monitor and improve detection, classification, identification, counting, and measuring to simplify and automate operational processes, reducing unplanned downtime and failure caused by human error. The platform supports multiple deployment setups (including cloud, gateway, on-premises, and hybrid approaches) and uses convolutional neural networks to generate custom AI models for imagery and user feedback scenarios. The system integrates seamlessly with third-party applications to deliver real-time alerts and notifications while providing a system of record for a company's visual assets. Hence, Cogniac helps clients drive the efficiency of visual tasks in complex environments to achieve exceptional accuracy levels that optimize workflows, increase safety, and reduce costs. Cogniac serves numerous industry verticals, such as automotive, transportation, logistics, packaging, kitting, and safety and security. Typical use cases include supply chain quality control inspection, surface damage identification, accident prevention, and real-time physical threat detection.

Elevating Key Product Attributes to Attain a Competitive Advantage

Cogniac purposefully addresses the rising demand for industrial operations and productivity by providing image and video analysis through its AI-powered visual intelligence platform. In the aftermath of the pandemic, manufacturers are rapidly adopting automation to prevent potential future crises. Combining AI models based on convolutional neural networks, cloud computing, and big data management, Cogniac's no-code computer vision platform differentiates itself by allowing end-users with very little technical knowledge to implement visual analytics seamlessly for industrial and other applications. When deployed, the models learn new characteristics by adapting archival imagery and input from data users. Due to its drag-and-drop graphical user interface, the solution does not require highly skilled data scientists or software engineers. Subject matter experts define the conditions they are interested in, provide example images and annotation, at times with as few as tens of images. The system then trains models on an ongoing basis searching for an optimal architecture and configuration, and automatically assesses what needs to be surfaced to the subject matter expert to be reviewed. This minimizes the effort the subject matter expert needs to apply in order to get the given result. With this level of simplicity, Cogniac enables employees to focus on the tasks within the process that drive the most value. Moreover, the system also leverages hyper-parameter optimization to accelerate smart automation. Because the ecosystem incorporates customers' existing processes and hardware, the platform constantly extracts information from ever-increasing visual data streams to optimize its value. Frost & Sullivan recognizes that this advanced platform, built from the ground-up for optimizing visual tasks of virtually any kind, elevates key product attributes to differentiate itself as a leading solution in the market:

- The solution requires little or no customer development from end-users.
- The computer vision learning platform is ready to deploy after training with as few as a hundred images.
- The system is highly scalable and supports rapid deployment across multiple cloud environments.

- New users can access already-optimized computer vision models used in multiple vertical domains, thereby eliminating the need to build specific functionalities when new demand for particular capabilities arises.
- And lastly, the solution is highly mature, being used today in mission critical deployments, by large tier-1 customers around the world.

Use Case: Streamlining the Kitting Process at Doosan Bobcat

Cogniac's recent collaboration with Doosan Bobcat, an American-based manufacturer of farm and construction equipment, decidedly demonstrates the efficacy of its enterprise-scale machine learning solution.

The Challenge

Industrial kitting is a vital part of the process of building complex machines. It involves organizing and assembling parts into bundles to deliver to the point of use, enabling manufacturers to streamline packing and shipping, improve inventory tracking, and control manufacturing inventory. As such, Doosan Bobcat's just-in-time manufacturing requires kitting for each machine it provides. Each serial-numbered piece of equipment is associated with a unique kit consisting of approximately 30 individual small crates that deliver all the necessary parts to complete it. Employees pick between 40,000 and 45,000 pieces every day, and the drawers come by every 24 seconds. Because many of these parts are small and look similar to others, only one out of three kits get delivered accurately due to human errors. Thus, the facility produces two-thirds of the kits incorrectly, a very inefficient and costly process.

Cogniac's Solution

The high number of different parts, coupled with many variables (i.e., the components may change or change position in the layout) and speed of the process, requires an AI solution that is dynamic in real time. The solution's capability to learn the different nuances of the drawers' contents is pivotal; therefore, automatic training of the AI model processing the images is of the utmost importance. Cogniac's edge appliance running its software — EdgeFlow™ — processes all images and integrates with Bobcat's business software to inform operators immediately if there is a mismatch, allowing them to fix the kit on the spot. Along with its prediction capabilities, the Cogniac system is intuitive and easy to use. It has completely automated all the decisions that data scientists typically make. Cogniac's system automatically trained close to one million models for the kitting application alone, the most significant number of custom AI models for a single-use case in the industrial AI space. For this reason, Bobcat's warehouse operators can automate visual inspections independently without the assistance of highly skilled experts. Hence, Frost & Sullivan acknowledges that Cogniac is leading the way in solving real-world problems. It offers visual kitting inspection capabilities that enable Bobcat to build its equipment as best as it can. In this instance, the kitting process' accuracy improved exponentially; Bobcat reports that the error rate has decreased from one in three to one in 20,000.

Notably, the equipment manufacturer completed the pilot in less than 60 days. A very intuitive visual interface guides the user step-by-step through the onboarding process, helping employees create applications in Cogniac's system by labeling a few images. Then the Cogniac engine takes over to

automatically monitor and adapt to changes while integrating with legacy manufacturing systems to provide a holistic AI solution that solves the business's real-world challenges. In addition, the content becomes a record system for the company's structured visual data, which includes information that the enterprise can use to optimize its entire supply chain.

Conclusion

Businesses increasingly recognize computer vision as a critical driver for improving quality control measures in the industrial environment, extending applications beyond manufacturing to include field equipment inspection, traffic monitoring, health sciences, and precision agriculture. Cogniac provides image and video analysis through its AI-powered visual intelligence platform. By combining artificial intelligence models based on convolutional neural networks, cloud computing, and big data management, Cogniac's solution differentiates itself by allowing end-users with very little technical knowledge to implement visual analytics seamlessly for a wide range of applications and industries. A learning engine constantly searches for optimal architecture and configuration variations, while minimizing manual intervention from subject matter experts. Cogniac employs top artificial intelligence, and machine learning engineers that leverage the most recent deep learning techniques to optimize its unique solution for scalable application in the real world that delivers best-in-class performance.

With cutting-edge technology leveraging a customer-centric approach, accelerated by its sophisticated team's thought leadership and passionate persistence, Cogniac earns Frost & Sullivan's 2021 Global Entrepreneurial Company of the Year Award in the computer vision industry.

What You Need to Know about the Entrepreneurial Company of the Year Recognition

Frost & Sullivan's Entrepreneurial Company of the Year Award recognizes the best up-and-coming, potentially disruptive market participant.

Best Practices Award Analysis

For the Entrepreneurial Company of the Year Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

Entrepreneurial Innovation

Market Disruption: Innovative new solutions have a genuine potential to disrupt the market, render current solutions obsolete, and shake up competition

Competitive Differentiation: Strong competitive market differentiators created through a deep understanding of current and emerging competition

Market Gaps: Solution satisfies the needs and opportunities that exist between customers' desired outcomes and their current market solutions

Leadership Focus: Company focuses on building a leadership position in core markets and on creating stiff barriers to entry for new competitors

Passionate Persistence: Tenacity enables the pursuit and achievement of seemingly insurmountable industry obstacles

Customer Impact

Price/Performance Value: Products or services provide the best value for the price compared to similar market offerings

Customer Purchase Experience: Quality of the purchase experience assures customers that they are buying the optimal solution for addressing their unique needs and constraints

Customer Ownership Experience: Customers proudly own the company's product or service and have a positive experience throughout the life of the product or service

Customer Service Experience: Customer service is accessible, fast, stress-free, and high quality

Brand Equity: Customers perceive the brand positively and exhibit high brand loyalty

