Israel High-Tech Solutions Report
Impact on Future Businesses & Investment

Topics
- Artificial Intelligence
- Cybersecurity

prepared by

MLB Asset Management

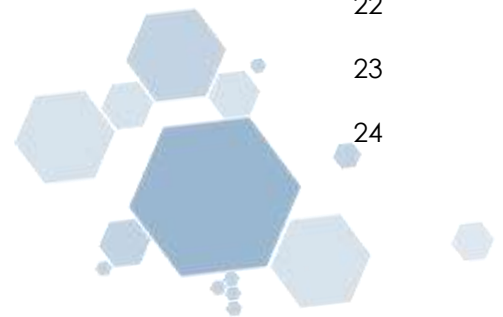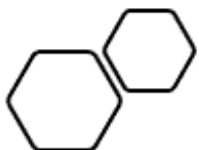SFC Licensed Corporation No.: BGD820

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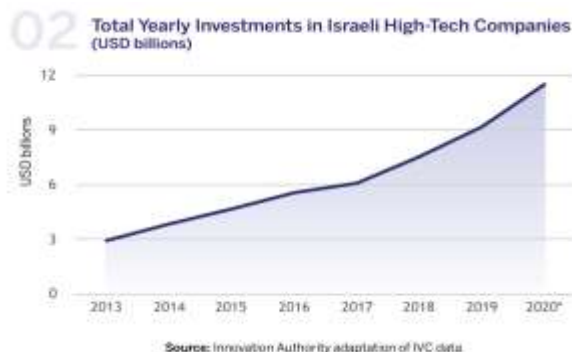
Israeli high-tech solutions have never enjoyed a better period in the year of 2021 according to the latest Innovation Authority Report 2020-2021. [1] It is said that the high tech industry from many perspectives, maintain a decent momentum and keep up with the growing constantly while Israeli start-ups keep attracting an increasingly large investments and achieving significant commercial success.

Israeli high-tech sectors demonstrated a substantial resilience to the COVID crisis, thanks to its ability to react swiftly to the new working environment and various conditions of uncertainty. High-tech indices continued to rise, contributing to the climb in the Innovation Authority's High-Tech Index. This index presents an aggregated situation report of the Israeli high-tech industry and the changes it has undergone.

Capital raised by Israeli start-ups more than quadrupled within a decade and stood at USD 11.5 billion in 2020, 20% more than the total raised in 2019, while the average funding round for start-ups rose by 10% in 2020 compared to 2019. Most of the investment growth is in the sums raised by advanced-stage start-ups with some unprecedented sums of hundreds of millions of dollars in each investment round.

02 **Total Yearly Investments in Israeli High-Tech Companies (USD billions)**

Source: Innovation Authority adaptation of IVC data

The leading sectors among the Israeli start-ups investments are Cyber and FinTech which attracted most of the capital in 2020, while digital health follows next – a field characterized by growing global demand. Furthermore, companies using Artificial Intelligence (AI) technologies raised more than USD 4 billion in 2020. The number of stock offerings by Israeli start-ups that are growing and maintaining their independence, reached a record of 31 IPOs in 2020, primarily on the Tel Aviv and Wall Street Stock Exchange.

Technological innovation has become a cornerstone of the Israeli economy, supported by robust global investment and demand for digital transformation. Political challenges from neighbours, small domestic markets, and other factors have meant that Israel's entrepreneurs have to think alternatively for commercial success at an international level, they made it a success, indeed.

As we started publishing our reports in Feb this year, we continue to offer a view of an even more substantial, pragmatic, and a medium term of investment opportunities for global investors in the midst of fears of the property crises and massive debt default in Asia, as well as the so-called forced common wealth together with the tapering strategy of the Fed policy.

Let's continue to explore the opportunities among a number of Israel high tech solutions and re-build our investment portfolios for following decades.

In the coming issue, we are going to cover the stories of some Israel high tech companies in the areas of artificial intelligence and cybersecurity which have attracted a lot of limelight in the past two years.

MLB FINANCIAL GROUP

Artificial Intelligence

"There's not much that needs to be done, in fact; the government has to send a signal, that's all," said Isaac Ben-Israel, a former Israeli defence force major general who, among many other titles, is head of the Security Studies programme in Tel Aviv University.[2]

In 2019, the Israeli government developed a national strategy to make the country a leader in artificial intelligence (AI). Then we come to 2021, where Israel Is somewhat lagging in AI. The Israeli government will now invest billions to bridge the gap according to HAARETZ.[3]

Last December, TheMarker[4] reported on the works of a committee on artificial intelligence headed by DR. Orna Berry. A plan was drafted to promote the field in Israel whereby the committee proposals involved substantial fundings indicative of $1.6 billion over five years.

What is the Trends, Predictions in the World of AI for the year of 2021 and beyond?[5]

To name a few:

The need for Digital Intelligence.

• Digital Intelligence is the measurement of how well an organization can understand its business processes, and the content and data within them from a variety of critical perspectives which will play an increasingly important role. It is important that more enterprises come to the realization that they must have visibility into their operations and must also adopt digital intelligence technologies into their overarching digital transformation initiatives. These solutions will allow organizations to illuminate paths to improved customer experience, reduce operating costs and sharpen competitive advantage.

Digital workers will transform the office

• This trend is obvious where the growing use of digital workers is widely happening across the globe in different types of businesses. According to new IDC research[6], the contribution of digital workers — such as software robots and AI — will grow by over 50% by 2022.

The proliferation of Process Intelligence

• Process Intelligence allows businesses to utilize the system-contained information and provide a visualized processing model. Further real-time analysis offers the organisations to identify outliers and bottlenecks, and predict future outcomes to facilitate decision-making of technology investments.

The normalcy of the hybrid workforce — Human and AI cooperation.

• Many people consider that artificial intelligence and automation will kill jobs. On the contrary, the emerging hybrid — human and robotic — workforce is alive and growing. Organizations are swiftly implementing cognitive AI and RPA that can handle high-volume, repetitive tasks at scale. As more and more user cases emerge, the hybrid workforce grows.

AI boosting cybersecurity

• Artificial intelligence will offer a much more effective and speedy skeleton for an impressive new advantage to improve cybersecurity. (More will be elaborated in Cybersecurity)

More AI doing AI things — automated AI development

• 'AI for AI', as what IBM calls it, is where you can expect to see new innovations using AI to help automate the steps and processes involved in the life cycle of creating, deploying, managing, and operating AI models to help scale AI applications into the enterprise.

Overall, artificial intelligence will reshape and redefine the way we live and work. The growing trend we can anticipate is to see more and more AI-enabled solutions in the workplace. These tools will normally help create new user experiences, better outcomes, and achieving our goals in a timely and efficient fashion. Nevertheless, it is your choice to become a leader in enabling successful and sustainable digitization powered by AI or if you will still remain stagnant because of the fear of change.
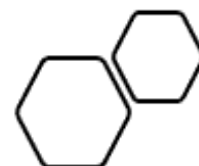
Cybersecurity

New Trends in Cyber Security to Know for 2021[7]

Cyber security is one of the most topics of concern over the past year while businesses and individuals are both aware of taking serious actions to prevent data leaks and other possible data violation threats. Still, the number of cyber attacks continues to grow and there is no sign of stopping making it a must for every company and tech specialist to find solutions and tackle the issues as soon as possible.

What are governments doing to protect data privacy?

- With the ever-rising number of data violations, The European Union's **General Data Protection Regulation** act (known as GDPS) and California's act named **California Consumer Privacy Act** (known as CCPA) are a response from governments.

- We should anticipate that more governments will push organizations forward to establish ground rules for cyber security. Nonetheless, it is always worrisome when governments do too much.

Here are the top cybersecurity trends for 2021 including:[8]

- Automotive hacking

Modern vehicles nowadays come together with automated software allowing seamless connectivity for drivers in cruise control, engine timing, door locking, airbags, and advanced systems for driver assistance. These vehicles use Bluetooth and Wi-Fi technologies which will also open them to several vulnerabilities or threats from hackers.

- Integrating AI with cybersecurity

AI is used to develop smart malware and attacks to bypass the latest security protocols in controlling data. AI-enabled threat detection systems can predict new attacks and notify admins for any data breach instantly, making it the next cyber security trend in 2021.

- Mobile: the new target

There is a considerable increase in mobile banking malware and attacks in 2019, making our handheld devices a potential target for hackers. All our photos, financial transactions, emails, and messages possess more threats for individuals.

- Cloud vulnerability

With more and more organizations now setting-up everything on clouds, security measures need to be in place and updated to safeguard the data from leaks. Although cloud applications such as Google or Microsoft are well-equipped with security from their end, still, it's the user's end that acts as a significant source for erroneous errors, malicious software, and phishing attacks.

- IoT with 5G networks

5G networks is a new era of inter-connectivity and will become a reality with the Internet of Things (IoT). This communication between multiple devices also opens them to vulnerabilities from outside influence, attacks, or an unknown software bug.

- Automation and integration

With the size of data multiplying every day, it is eminent that automation is integrated to give more sophisticated control over information. Security measurements are incorporated during the agile process to build more secure software in every aspect. Large and complex web applications are even harder to safeguard, making automation, as well as cyber security, a vital concept of the software development process.

- Targeted ransomware

Ransomware threatens to publish a victim's data unless a ransom is paid. Still, it can affect large organizations or in the cases at a national level.

- Cyber warfare

They have a significant impact on an events such as elections, and criminal activities during this time will surge. It is important for the high-profile data breaches, and political and industrial secrets to be protected soon.

- Other insider threats

Human error is still one of the primary reasons for data breaches. Any bad day or intentional loophole can bring down a whole organization with millions of data stolen. So make sure you create more awareness within premises to safeguard data in every possible way. We can move forward to take a look at some of the cyber securities companies and how they can relieve us from the concern.

Artificial Intelligence
& Cybersecurity
Israel High-tech Solutions
Companies Profiles

The World's Top Performing AI Processor for Edge Devices

Hailo offers a breakthrough microprocessor uniquely designed to accelerate embedded AI applications on edge devices. Breathe life into your edge AI product today with Hailo-8.

HAILO

Our Aug report introduced Israel high tech solutions applied in urban mobility and smart cities. All these solutions require resolution processing which leverage on artificial intelligence technology. We will cover the leading AI technology solutions from Israel in this report to give readers a better picture of the ecology of the inter-related technology and its related potential as these technologies further develop.

We chose Hailo.ai[9] as our first Israel company on AI technology not only because they are the leading company, it is also because when we were doing our research on selecting the companies, Hailo raised USD136m in the series C funding round, for their edge in AI chips as it headed for IPO in Oct 2021. The amount is the largest in the Edge AI chip space to-date.[10]

Before we come to the company profile, let's have some common understanding of what is "Edge AI" and why it is so important and immensely popular today?

What is Edge AI?[11]
Edge AI refers to the use of artificial intelligence in the form of **machine learning algorithms running directly on edge devices**. Machine learning is a broad field that has seen tremendous progress in recent years. It is based on the principle that a computer can autonomously improve its own performance on a given task by learning from data – sometimes even beyond the capabilities of humans. Today, machine learning can perform many advanced tasks, including but not limited to:
- Image Classification / Object Detection
- Audio Scene / Speech Recognition
- Forecasting (e.g., Weather & Stock Markets)
- Anomaly Detection

You might wonder: if machine learning has been around for so long, what makes Edge AI suddenly so special?

To shed some light on this, let's first look at what **Edge** in Edge AI really means and why it is so important.

In *Edge Computing*, information processing occurs on distributed IoT devices that are in the field and in active deployment (or on the Edge). Some examples of edge devices include smartphones, as well as various SBCs and microcontrollers.

Although cloud computing is still a very important and powerful tool for IoT, Edge Computing has been getting more attention lately for two important reasons.

Reason 1: The hardware on edge devices has become more capable while remaining cost competitive.

Reason 2: Software is becoming increasingly optimised for edge devices.

With Edge AI, IoT devices are becoming smarter, because edge devices are now able to make decisions. They can **make predictions**, **process complex data**, and **administer solutions**.

Now you come to the key word – IoT (The Internet of Things) and this casts the limelight on to our first AI company profile.

Hailo AI
Established in Israel in 2017 by members of the Israel Defense Forces' Elite Technology Unit, Hailo developed one of the world's best performing AI processors for edge devices. Hailo's deep technology is set to transform the AI chip industry, putting new computing possibilities within reach. Their AI processor is designed to fit into smart devices in various industries and usage cases including automotive, smart cities, retail, and industry 4.0.

Technology
Hailo produces Hailo-8™ Mini PCIe Module AI accelerator for AI applications. The Hailo-8 features up to 26 terra operations per second (TOPS), significantly outperforms other edge processors, and is smaller with a higher power efficiency thanks to the innovative architecture on **neural network core properties.**

The Hailo Architecture

Automotive · Industry 4.0 · Smart City · Smart Retail · Smart Home

Industries and Applications

Automotive

Advanced Driver Assistance Systems **(ADAS)** is equipped in many vehicles as well as in vision required systems Automatic Emergency Steering **(AES)** and lane support systems. Current CPU and GPU have a limited power budget which is unable to support an escalated demand for intelligent cameras. Hailo is designed to support the application efficiently. Hailo also supports **Autonomous Driving** where L3 autonomy represents a complex multi-sensor system as a human driver has. Demand for higher image resolution means a neural processing requirement is needed compared with ADAS when human interaction is phased out of the loop. Hailo processors can support:

- Real-time AI processing of multiple hi-resolution video streaming.
- Scale up different sensors to maximize commonalities ADAS

Industry 4.0

Hailo processors can streamline manufacturers, improve logistics automation, enhance cost saving and boost productivity without compromising quality and safety. As the technology applies to Industry 4.0, the advantages will include:

- Robotic vision - material handling, assembly and processing, autonomous navigation
- Manufacturing - QC automation and line inspection, predictive maintenance, continuous improvement, logistics management
- Safety & security - safety inspection, PPE detection, surveil and secure

Smart City

The smarter the cities being developed, the higher the demand of smart data analytics. The Hailo AI processor is designed to efficiently empower deep learning-based video analytics that monitor and produce insight. There are 4 major applications in smart cities including public safety, mobility, health monitoring, and infrastructure & services management.

Public Safety

Aspect	Improvement
Intelligent monitoring	Reduce need for connectivity & bandwidth
Real time inference results	Reduce need to store terabytes of footage
Deep learning	Limited power and area resources
Real time hi-resolution video	Allow greater camera depth and coverage

Sources: Company

Mobility

The Hailo processor performs real-time monitoring of direct vehicle and human traffic, helps analyze and plan for infrastructure and maintenance, and enforces law for traffic violations.
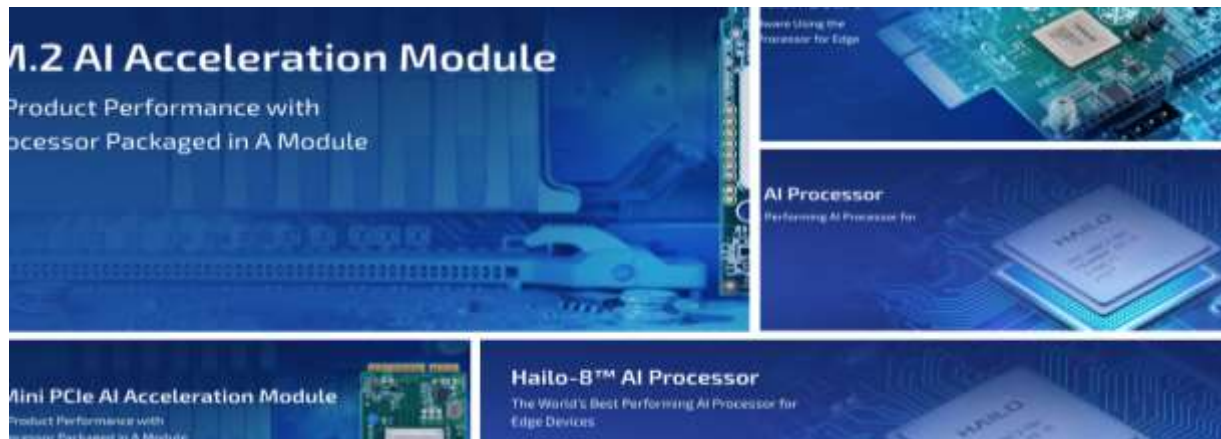
Health Monitoring

As it provides real-time emergency assistance in public spaces, it can monitor sanitation and hazardous materials safety. It can also monitor air quality and enforce public health measures.

Infrastructure and Services Management

The technology monitors municipal infrastructure for malfunctions, hazards, potholes, pipe explosions, drainage backup, and can also monitor and protect utilities such as power stations, water and gas pipes, and sewer damage while drawing insights from automated analytics for infrastructure and maintenance planning.

Smart retail

Hailo helps boost business outcomes through automation, optimization, and intelligence targeting scan face mask and contactless transactions mainly through video analysis. Besides, the following analysis may also be performed: Customer flow / Queue detection / Smart advertising / Purchasing behavior / Inventory management / Security & privacy.

M.2 AI Acceleration Module
Product Performance with Processor Packaged in A Module

AI Processor

Mini PCIe AI Acceleration Module
Product Performance with Sensor Packaged in A Module

Hailo-8™ AI Processor
The World's Best Performing AI Processor for Edge Devices

Smart Home

Hailo provides deep learning capabilities to service robots, gesture-controlled devices, and smart vision devices. Hi-resolution cameras enhance smart security surveillance and intruder detection, while irregular behavior will trigger alarms, especially in the care of kids, pets, and the elderly. All the services provided may be personally customized.

MLB Commentary

We believe, In the coming years, AI will become the defining feature for creating new business value and the reshaping of user experiences. The ability to bring AI-based features to market will increasingly be the deciding factor over whether companies succeed or fail.

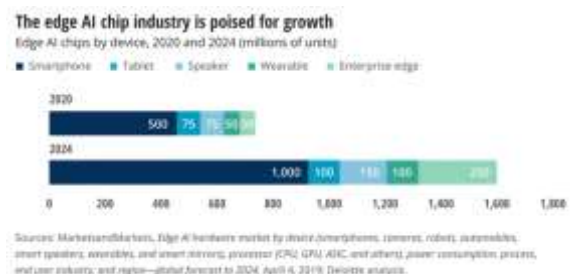### Why is Edge AI Important?[11]

While the tangible benefits of Edge AI are clear, its intrinsic impacts may be more elusive.

Edge AI Alters the Way we Live

Edge AI brings several benefits to our daily lives, which rely more and more on IoT devices which change the way we live. For example, autonomous driving is the product of advancements in Edge AI.

The solution Hailo develops bridges the gap between existing and future AI technologies and the computation capacity needed to power these applications. The company is focused on building AI processors efficient and compact enough to compute and interpret vast amounts of data in real-time — processors that can be embedded in the edge devices themselves. Now, complicated AI applications that could previously only run on the cloud are made possible to run on the edge, and the best part – with a fraction of the power consumption.

Today, the world is facing a global AI chip shortage and there is only a handful of companies that produce them. According to some estimates, looking ahead, the global AI chip market is expected to grow around 25% annually, which makes AI chips a particularly attractive investment.

The edge AI chip industry is poised for growth
Edge AI chips by device, 2020 and 2024 (millions of units)

Sources: Marketsandmarkets, Edge AI hardware market by device (smartphones, cameras, robots, automobiles, smart speakers, wearables, and smart mirrors), processor (CPU, GPU, ASIC, and others), power consumption, process, end user industry, and region—global forecast to 2024, April 4, 2019; Deloitte analysis.

Deloitte Insights | deloitte.com/insights

Sources: https://www2.deloitte.com/us/en/insights.html

If you believe edge AI chips are not only the heart, but also the brain of the next generation of IoT technologies, perhaps you should consider including it in your portfolio. (Pls refer to our disclaimer for ref.)

Sources: Bloomberg

For your reference, above is the ARK Autonomous Technology & Robotics ETF (NYSE: ARKQ). This exchange-traded fund (ETF) includes leading companies in edge AI chip manufacturing. And year to date, the total return for this industrial innovation ETF is nearly 24%. (Please refer to our disclaimer for ref.)

A new paradigm in industrial machine vision
From project to product. From complex to simple

Quality Control Meets Autonomous Machine Vision

INSPEKTO

Another artificial intelligence company we are going to cover is Inspekto[13], the German-Israeli pioneer of Autonomous Machine Vision (AMV), based in Baden-Württemberg, Germany[14]. Backed by leading industrial businesses from across the DACH region [Germany (D), Austria (A), and Switzerland (CH)], Inspekto Autonomous Machine Vision systems are designed to put the Machine Vision market on a one-way course to replace existing integrator-centric solutions with out-of-the-box QA systems.

The systems are driven by Autonomous Machine Vision – Artificial Intelligence technology which is regarded as an important step towards the Industrial 4.0 revolution, and their products aim to eliminate the costly integration and customized developments that have characterized traditional machine vision technology.

How Inspekto's Technology solve problems?

Contrary to the old-fashioned industrial machine vision technology, which used to be complex, need a lot considerations about the application, location, material, process and many others, making it difficult to deploy. Autonomous machine vision is a whole new category - making machine vision smarter and easier to implement, due to the self setups and self settings, which is appropriate for a very wide range of use cases & scenarios.

A vision of Plug and Inspect™ QA
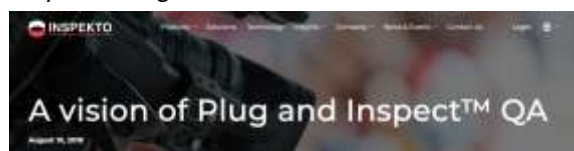
Inspekto is the founder of industrial Autonomous Machine Vision for quality inspection, gating and sorting., they launched its revolutionary product in 2018, powered by Plug& Inspect™ technology. This German company with Israeli DNA, is working with a handful of leading German investors, including such top players as Mahle, Grazia, Steinbeis and ZFHN, and numerous leading DACH, French and Italian top global manufacturers, to revolutionize QA in manufacturing. [15]

Autonomous Machine Vision for QA

Inspekto's solutions for QA automate QA processes with a machine vision system that is cost-effective, easy to set up and train, and flexible enough to tackle a wide variety of QA challenges. The system's powerful machine vision and artificial intelligence capabilities mean that manufacturers can also independently change the object being inspected and the QA system, or even move the system to another production line altogether, on their own, in minutes, with no need for any external experts.

Technology

Inspekto developed the latest INSPEKTO S70 Gen2., an autonomous Machine Vision AI (AMV-AI) solution which comprise of 3 independent and synergetic AI engines driving a unique electro-optic system.

Step 1: Acquisition (Getting Image)
- Self set-up of all optics parameters per specific use case & scenario
- Self adjust mechanism during runtime dynamically mitigating changes in the production environment
- Smartly selects optimized image from the live stream for the detection and inspection engines

Step 2: Detection (Identifying parts)
- Recognizes and detects rigid objects of any shape and surface
- One reference image is sufficient for detection
- Supports variations in location and rotation in the Field of View (FOV)
- Can be self-triggered or use an external trigger

Step 3: Inspection (Finding defects)
- Requires 20-30 good parts (OK) only, with no onsite training
- Understands product tolerances
- Physical attributes
- Differentiate between defects and permittable defects (without any prior defect references nor training)
- Ongoing improvement via continuous deep-learning

We can tag along
Optional professional services when you need them

An inspection solution for every production concept
In-line, stand alone or quick response mobile

INSPEKTO

Inspekto S70 Industrial Inspection made easy
One Product – Unlimited use cases – Re-defining Visual Inspection

Computer Vision & Deep Learning

Smart algorithms on integrated hardware

Real time software optimisation

Holistic A.I. Machine Vision Engines

How does the solution disrupt the industry?

The INSPEKTO S70 Gen.2 is a fully-equipped out-of-the-box industrial inspection product with unprecedent simplicity & immediacy. It combines a unique electro-optics system with Autonomous Machine Vision AI (AMV-AI) technology automating industrial quality assurance. By using an edge device, it is easy and quick to deploy – requiring no project.

The Inspekto S70 can inspect products and parts in almost endless situations. It doesn't need tailoring the system to the specific use case. This includes the manufacturing processes of various industries; different materials, inspected for different reasons and handled in a host of methods.

Case Study Example

Automotive - Bosch (Germany)

Automobile manufacturers proceed visual quality assurance to ensure no defective products are sent to the next tier of the production line which eventually will hand over to the users. There were many cases of costly recalls at the day when AMV did not exist. On the other hand, human inspection recognizing defects is only 25% effective, and traditional inspection solutions normally cost between 70K and 150K Sterling to deploy on a production line which is time-consuming, labor intensive, and expensive.

The benefits of AMV in automotive:

• Cost effective
• Flexible installation
• 20 to 30 good sample benchmark
• High accuracy, resources effectively applied
• Improve traceability

INSPEKTO

Parting Wall Integrity and No Excess Plastic

Inspection Use Case

Excess material check

This object is a 'parting wall', part of a car's HVAC system. The holes should to be clear of any excess plastic material left over from the plastic injection system.

Excess plastic material blocking the holes.

The holes can have some texture flaws.

The holes are see through without unified background.
2 similar parts come out of the machine (1+1), but the second part is turned 180 degrees

Production Environment

Handling Arm

Automatic

Relay

40 ppm

Part Description

Name: Parting Wall

Material: Plastic

Part Size: 25cm x 35 cm

Production process: Manufacturing

Industry: Automotive

Using INSPEKTO S70

NOK

OK

www.inspekto.com

INSPEKTO

paradigm in
trial machine
roduct. From complex to simple

Combating the Coronavirus Pandemic[16]

Another case study that drew plenty of media attention recently: to help in the fight against COVID-19, Inspekto has made its signature product available to Univent Medical GmbH, a face mask manufacturer based in Baden-Württemberg, Germany, who recently established a new production line to respond to the pressing market demand for emergency supplies. The INSPEKTO S70 has recently been installed for the quality inspection of FFP2 face masks. In particular, the system is expected to detect defects in the masks' ultrasonic soldering, metal nose holder, company and CE-logo, and straps soldering.[17]

In summary

Inspekto AMV system eliminates the risks that come with traditional machine vision systems as it creates the proof of concept (POC) which will take users less time than they would normally need to just make the research and select the right components for any other machine vision project.

The solution is also generic or universal, meaning that it can inspect a very wide range of parts and use cases and not be limited to the one product it was tailored to inspect. This provides the flexibility required to switch from one part to another, or one location to another, quickly and easily. The below comment is from BSH which may conclude how Inspekto is so important in the AMV development.

"At BSH, we use the INSPEKTO S70 for variant validation, defect detection and assembly check. The installation was very simple and straightforward, and we saw benefits in terms of reduced waste costs and independence from machine vision integrators. We found the team at Inspekto friendly, helpful and agile."

Markus Maier, Specialist Robotics and Computer Vision Technologies at BSH

MLB Commentary

Manufacturing companies across the world are planning to invest more in automation post COVID-19. The demand for automated quality assurance has increased because industries have realized its importance in manufacturing processes. The situation is further elevated due to the COVID-19 outbreak that has led to less human intervention in various processes. This has resulted in a wider acceptance of machine vision as an integral part of long-term automation development processes. The use of machine vision in automated production processes helps identify problems in a short span of time. This, in turn, helps reduce costs and improves response times. Also, it helps recognize flawed goods, reducing the risk of the return of products and ensuring higher customer satisfaction.

In terms of investment, what can investors refer to in order to understand the trend of the AI investment market? Above is the comparison table that can serve as a kind of indicator.[18] Artificial intelligence or Machine Intelligence has arisen from science fiction and is used commercially nowadays. The applications cover a broad field. Algorithms help in the evaluation of large data sets, pattern recognitions, and even film production as well as the automation of many processes. Learning systems play a major role here, for example, systems that make autonomous driving possible, fight crime and computer viruses, assist in surgery, or control investments in the financial market. We believe investing in the technology is not just a trend, but it is investing in our own future. (Pls refer to our disclaimer for ref.)

There were more than 490m people who were affected because of data breaches in the year of 2019 with an estimated global cost of cybercrime reaching USD 600 billion, according to the Meticulous Market Research Pvt. Ltd. in its June 20 issue.[19] The endpoint security market also estimated a USD12.5 billion cost in 2020, growing to USD18.6 billion by 2027. Riskbased Security also reported that in its 2020 Year End Data Breach QuickView Report, there were 3,932 publicly reported data breaches, compromising over 37 billion records.[20]

Kape
Kape, the recently well-known cybersecurity company, was founded in 2011 and is the first cybersecurity story in our issue today. Based in Israel and listed in the UK, recently, Kape specialized in digital privacy and security products including VPN software and antivirus solutions.

It has become so famous today because a USD936 million acquisition deal was announced in September this year, and now Kape owns ExpressVPN,[21] which makes it the leading VPN provides globally. Today's Kape owns private Internet Access (PIA), Cyber Ghost VPN, ExpressVPN, Webselenese and Intego Antivirus.

It is obvious that Kape is targeted on expanding its VPN customer base by means of an M&A exercise; they are ambitious to share a piece of the pie in the Asian telecom market and want to become a major global player. This exercise works for them and in their recent 2021 interim results, their revenue has surged by 21% to USD95.5 million, which is a 27% increase on a proforma basis.

What is Virtual Private Network (VPN)?
A VPN is a protected network connection encrypting users' internet traffic. After connecting to the internet through a VPN, all the traffic from the computer is first encrypted and routed to a VPN server, protecting it from unwanted data theft and tracking.

Using VPN will allow users to protect themselves as both incoming and outgoing information will flow through the VPN server in the first place, implying that the messages sent is hidden from the internet service provider or network administrator. A VPN can change user's IP addresses as it will route the internet traffic through a secure and encrypted tunnel.

VPN can also provide users with some protection when they login to a public Wi-Fi. Encrypted pipeline starting from the device used will run through the public Wi-Fi network all the way to the VPN server which will then hide the user's location, etc.
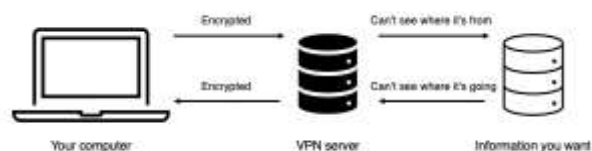
Imagine if there was no VPN, large institutions may abuse and build a relatively thorough profile about users by combining IP addresses with other information gleaned from metadata, cookies, trackers, and browser-fingerprinting tactics. We cannot simply assume all data-driven businesses are innocent when the rate of cybercrime keeps breaking records year after year.

ExpressVPN
To understand more about Kape, we cannot skip the latest acquisition limelight of ExpressVPN, which expanded Kape's VPN business by an additional 6 million paying subscribers. Now let's find out why ExpressVPN is so popular:

ExpressVPN adopts strict policy to keep no activity and no connection logs - **No Log policy** which is one of the most welcoming policies as the service provider does not collect users' browsing activities and connection IPs and user's online activities are kept anonymized and private.

Encryption

Another factor that makes ExpressVPN so important is because it uses AES (Advanced Encryption Standard) with 256-bit keys. This is the same encryption standard used to protect classified information which is also adopted by the U.S. government as well as by the security experts worldwide. In addition, ExpressVPN uses 4096-bit key on its RSA-encrypted OpenVPN, which provides an even higher security than most other VPNs.

Jurisdiction and server location

Servers' location and jurisdiction are also welcoming keys for ExpressVPN since they have their server locations widely distributed across 94 countries and extend their presence to 160 different locations. At the top level, they registered their servers to be based in the British Virgin Islands (BVI) where the offshore regulatory system affords more privacy and anonymity than either in the U.S. or the EU, making ExpressVPN an ideal offshore VPN.

Security

ExpressVPN also invests in advanced features such as kill switch / network lock to provide users with data safety immediately if the VPN connection drops. It allows the traffic split tunnelling, and the data will route through the VPN instead of accessing to the internets directly.

Highly compatible

ExpressVPN is compatible with Windows, MacOS, Android, iOS, Linux, Kindle Fire, Blackberry, and Amazon TV platforms. It can be configured on the router which would then protect every other device that connects to the network.

Before the M&A of ExpressVPN, Kape used to develop and distribute a variety of digital security software products to ensure users' safety and protect digital identity. Some products are highlighted below.

Private Internet Access (PIA)

Kape acquired Private Internet Access (PIA) VPN in 2020, a US-based VPN service provider with 10 years experience and 15 million customers worldwide. PIA's features include advanced split-tunneling[22], advanced encryption settings[23] and open-source, built-in kill switch[24], transparency, no log-keeping policy and unlimited bandwidth.

Cyber Ghost VPN

The Cyber Ghost VPN apps configures users' data to the 256-AES military-grade encryption protocol and supports multiple protocols. Users can choose between the IKEv2, L2TP, and OpenVPN protocols to secure the data transfer at a lower connection speed.

The whole idea of the shared IP addresses used by the Cyber Ghost VPN ensures online activities are difficult to trace back to a single address which helps to further reinforce security.

In addition, the system DNS-leak protection and kill switch technology will keep wireless connections secure. Their automatic kill switch is an important security feature that ensures an IP address does not accidentally leak if there are connectivity problems. This can be performed by disabling the internet if it detected that the VPN has been disconnected. Moreover, the product deployed 7,300 VPN servers in 91 countries of 113 locations which allow users to switch freely to the optimal servers for the best VPN performance.

To swiftly expand the market share in the digital privacy and cybersecurity arena, Kape aims to become the leading VPN SaaS provider, and has been actively seeking out the most innovative, technically advanced, and rapidly growing brands. The company was founded in the year 2011, and went IPO on the AIM in 2014. To-date, they have completed 6 acquisitions over 5 years and over USD308 m of capital was spent on M&A. Now the company owns brands including:

Intego Antivirus
Intego is the leading antivirus software exclusively for Mac computers and has a proven track record of success dating back to 1997. Their specialized services are tailored for the Apple ecosystem and there is no comparable so far.

ZenMate VPN
ZenMate is yet another leading no-logs VPN service provider dedicated to bringing the robust security and anonymity of VPN technology to everyday internet users. One ZenMate subscription covers an unlimited number of devices — a VPN with unlimited utility for users.

webselenese
Global leaders in providing data-powered, consumer-focused privacy and security content via a portfolio of comparison websites that offer unbiased reviews, guides, and information to help consumers navigate the digital world.

Restoro
An antivirus and system optimization software for Windows that is designed to eliminate malware, monitor for any ongoing security threats, and actually restore PCs to optimal performance by repairing damaged files and freeing disk space all at once.

DriverFIX
Private Internet Access is a US-based VPN service provider that boasts a court-proven no-logs policy. With over 10 years in business and millions of satisfied customers, PIA is well-equipped to provide world-class VPN services.

Conclusion
With most employees working from home amid today's COVID-19, enterprise VPN servers have now become paramount to a company's backbone, and their security and availability must be the focus going forward for IT teams.

MLB Commentary
Kape offers a wide range of security and privacy products for personal data protection and is the leading player in the industry. On top, Kape is on its purchasing spree where Kape Technologies has mainly focused on making significant acquisitions in the VPN/data security industry in the past few years. Some of its recent purchases include Private Internet Access (PIA) which it bought in December 2019, GhostVPN, which it acquired in 2017, Zenmate in 2018, and Webselenese that it acquired around six months back. All these are reflected in their recent surge of share price.

13/10/2018 - 12/10/2021

With the acquisition of ExpressVPN, Kape aims to increase its paid subscriber base, which will most likely cross six million. Furthermore, the company intends to strengthen its stronghold in the digital security fraternity along with creating a "tier-one digital privacy and security player. Should investors want to include the nature of cybersecurity companies in their managed portfolios, perhaps they should consider Kape as one of their picks. (Please refer to our disclaimer for ref.)

The company profile that opens the next page of our Cybersecurity section is Argus Cybersecurity and they are mainly focused on vehicles safety.

Digitization of in-car systems is essential to vehicle automation which dominated the agenda of most automotive industry leaders in recent years. The connectivity that shares the mobility, data collection, software applications and protection gained comprehensive applause for the development of future transportation while it also exposes the vulnerability to their data protection. WIRED Magazine researchers were once able to gain control over the Electronic Control Unit (ECU) - steering, transmission and even brake using wireless technology (without mention of the name of the automotive company). The test has caused numerous concerns over the cybersecurity of modern vehicles if hackers can easily seize control of the vehicles by taking advantage of the vulnerability uncovered in the multimedia systems, electronic systems, and data sharing systems. Problems are red flagged and solutions to resolve the problems are demanded immediately.

According to UNECE[25], vehicles contain up to 150 electronic control units and about 100 million lines of software code. It was projected to rise to 300 million lines of code by 2030. Study from Mckinsey also estimated that the market of digitalization of transportation will grow from USD 4.9 billion in 2020 to USD 9.7 billion in 2030, where the software business will represent half of the market by 2030.

Israel cybersecurity company - Argus Cybersecurity was founded in 2014 and is based in Tel Aviv with offices in Michigan, Silicon Valley, Stuttgart, and Tokyo. They engaged in automotive cyber security, which provides comprehensive and proven solutions to protect connected cars and commercial vehicles against cyber-attacks. The management of the company consists of experts in cybersecurity, big data and automobile, and some of them have even served in the Israeli IDF Intelligence Unit 8200 and was awarded one of the Israel Defense Prize-winning projects.

Argus Cybersecurity processes was granted over 70 pending patents, and is offering to the industry multi-layered, end-to-end solutions without expensive vehicle recalls. Argus has been working on 15 projects and facilitated 57 million vehicles, protecting its customers from almost all types of automotive cyber attacks.

Technology & Applications

To prevent, detect, manage, and mitigate cyber threats, vulnerabilities and attacks on all types of passenger cars and commercial vehicles, Argus Cybersecurity **Automotive Cyber Security Service** developed three integral components, which can be tailored to fit specific customer objectives. The service is also designed to strengthen customers' cyber security capability while enabling their compliance with regulations and standards, such as UNR 155[26] UNECE WP.29[27] vehicle cyber security regulations, ISO/SAE 21434[28], and other industry standards.

The three components of Automotive Cyber Security Service are

1. **Cyber Security Management System Services (CSMS)**, which includes:
- CSMS Gap Analysis
- CSMS Process Definition
2. **Cyber Security Governance Services**, which includes:
- Incident Response
- Automotive Cyber Security Training
- Technology Consulting
3. **Services to strengthen vehicle cyber security posture and assist type approval**.
- Threat Analysis & Risk Assessment (TARA)
- Security Requirement

Argus products also have three categories, and they are designed to make sure vital security needs are met from the concept phase throughout the vehicle's lifespan and their range includes the following:

ARGUS
CYBER SECURITY

1. **Automotive Cyber Security:**
   - Argus ECU Protection
   - Argus Vehicle Vulnerability Management
   - Argus Fleet Protection
   - Argus In-Vehicle Network Protection
2. **Software Updates Over the-Air**
   - End-to-End Software Updates OTA
   - Angus Differential Updates
3. **Aviation Cyber Security**
   - Angus Aircraft Fleet Protection
   - Angus IFEC Protection

Argus solutions comply with the UNECE WP.29 which is the United Nations Economic Commission for Europe (UNECE). It is the World Forum for the Harmonization of Vehicle Regulations. Originally it was named the Working Party (WP) of Experts on Technical Requirement of Vehicles. The forum then defined the criteria for type approval for wheeled vehicles, equipment, and parts and is the largest international vehicle regulatory system in the world.

With all features given and developed, they have been working together with parties of big names to strengthen their roadmap. We can take a look at some of their achievements below:

Jan 2019 - Argus Demonstrates its Cyber Security Solution on NVIDIA DRIVE Autonomous Vehicle Platform at CES

Jan 2019 - Argus, Elektrobit and NXP Provide Combined Solution to Protect Connected and Automated Vehicles

Jan 2019 - Singtel and Argus join forces to strengthen cyber security capabilities for Singapore's transportation sector

Apr 2019 - Telekom partners with specialist from Israel in car cyber security

Jul 2019 - Argus Fleet Protection Now Operational in both Automotive and Commercial Aircraft Fleets

Nov 2019 - DEKRA Partners with Argus Cyber Security

Mar 2020 - Argus and NXP Strengthen Vehicle Cyber Security with Joint Solution for Automotive Ethernet Networks

Jul 2020 - Green Hills Software Welcomes Argus Cyber Security into Its Rich EcoSystem of Automotive Partners

Mar 2021 - Argus Collaborates with Microsoft to Bring End-to-End Automotive Cyber Security Cloud Solution to Vehicle Manufacturers with Microsoft Azure IoT

Oct 2021 - Argus Cyber Security Wins "Automotive Cybersecurity Innovation of The Year" Award for its Outstanding Penetration Testing Technology

Their recognition is also impressive and to some degree, the third party awards and trophies have endorsed their technology. To name a few:

 Automotive Cyber Security Innovation of the Year (2021) Award

Cybersecurity Breakthrough Award 2019

20 Tech Innovators to Watch in 2018

Argus Makes One of Most Innovative Companies 2017

One of Europe's Top 100 Companies 2017

Israel's 2017 Rising Star Winners

In summary

As most vehicles become increasingly software-driven and inter-connected, their exposure to cyber risk increases. To address this risk and comply with the universal regulations such as the UNR 155 and GB/T, vehicle manufacturers need to have ways to verify that their vehicle software is free from vulnerabilities. [29] Argus Cyber Security is considered a global leader in cyber security for connected mobility. They have been working along with many automotive manufacturers to tackle the facing issues nowadays.

One commonly used automatic testing technique is **fuzzing**[30], which sends multiple messages/signals to a target system, say for example, the vehicle ECU, until it triggers a bug. The best and ideal fuzzing method is coverage-guided fuzzing. Coverage-guided fuzzing is virtually impossible for testing the binary code of embedded software due to the time and effort involved during setup.

With Argus's breakthrough in the technology, and now, for the first time, vehicle manufacturers can cost-effectively test their embedded software, potentially with higher possibilities to find more vulnerabilities, and mitigate them before they cause any damage.

Yaron Galula, CTO Argus Cyber Security said: "Prior to this innovation, it wasn't feasible for vehicle manufacturers to use coverage-guided fuzzing for testing embedded devices."

Bryan Vaughn, the Managing Director of AutoTech Breakthrough Awards said at the time when the awards went to Argus: "Argus' innovation raises the bar on cyber security for the entire Automotive industry."[31]

Furthermore, Argus solutions can fully integrate with the UNECE WP.29 regulations on cybersecurity and this regulation set an organizational framework and minimum requirements that impact all automotive players along the value chain.

MLB Commentary

The automotive industry has almost every aspect of vehicle design fully connected into a single software platform/ dashboard. Automakers must also comply with regulations including United Nations Economic Commission for Europe (UNECE) World Forum for Harmonization of Vehicle Regulations Working Party (WP) 29 which is set to be introduced from mid-2022 onwards and this will lead to big industry changes, including internal design processes and a focus on cyber security.

It is important for Argus to comply with the regulations on cybersecurity and software updates, especially along the value chain of vehicle manufacturing without costly recall. This is supposed to be the first thing investors need to bear in mind.

As an automotive cyber security pioneer, Argus is helping car manufacturers, their Tier 1 suppliers and aftermarket connectivity providers protect connected cars and commercial vehicles from car-hacking. Its solutions combine innovative security methods and proven computer networking know-how with a deep understanding of automotive best practices. All the Argus's achievements over the years have allowed the company to be an outstanding leader and leave a lot of its competitors behind.

In the most recent updates: Kaymera Technologies, provider of military-grade mobile security solutions, announced that it is working closely with Argus Cyber Security, to provide vehicle manufacturers and smart mobility service providers a joint solution to protect vehicle infotainment systems running Google Android.[32]

For those who have preferences in investing, cybersecurity and vehicle cybersecurity are areas investors should not overlook. Investing in the big names where the most outstanding one, though may be old-fashioned, would always the best strategy. (Please refer to our disclaimer for ref.)

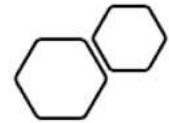| Event	Date
CES 2021 IS All-Digital	2021 Jan 11 - 14
Asian Financial Forum AFF	2021 Jan 18 - 19
MedinIsrael 2021 (Virtual)	2021 Apr 20 - 21
CommunicAsia Singapore	2021 June 9 - 11
MWC Barcelona	2021 June 28 – 2 July
Israel's AgriFood Week 2021	2021 Oct 24 -28
FinTech Week HK	2021 Nov 1 -5
MEDICA Germany	2021 Nov 15 - 18

In the event, we have invited **Yoav Haimi**, Commercial Consul, Head of Economic and Trade Mission at Consulate General of Israel in Hong Kong, **Leo Lo**, Founder of Asia PropTech, and **Amalia Paz**, Co-Founder of Bricks Proptech Innovation to deliver keynote speeches discussing Asia & Israel Proptech opportunities.

We would like send our thanks to the 130 participants who took part in the Israeli PropTech virtual event held on the Oct 26.

- **ARK** analyses and learns metadata of architectural designs and creates infinite variations that account for local regulations and ordinances
- **Aura Air** is a purifier that kills 99.9%of viruses and bacteria.
- **Conomate** analyzes plans using advanced algorithmics and AI capabilities to detect all cost-related complexities and estimates man-hours by developing a special BIM-based method.
- **Datumate** is a non-intrusive, end-to-end service and collaboration platform that delivers automated engineering data analytics within hours of data capture.
- **Eva** is a new supplementary cementitious material, partially replacing cement material.
- **Gauzy** enables transparent materials to change from controlled levels of opaqueness to transparent on demand, instantly transforming the spaces where we spend our most time.
- **LightYX** turns blueprints into interactive field tools by projecting 2D/3D blueprints on to the construction surfaces using an accurate laser
- **Sparx** revolutionizes the way people lease apartments utilizing MR and AI.
- **Wint** can detect and stop leaks at source using Artificial Intelligence.
- **Vplans** is a multi language platform that helps construction companies organize their plans, meeting summaries, tasks, and a lot more.

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