WHITE PAPER 2022

How Computer Vision is reshaping the finance and insurance industry

Addepto Case Studies

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Computer vision is definitely one of the hottest applications of artificial intelligence. Thus - on the surface - it may be associated mainly with funny filters on social media, eCommerce, or, if we keep digging, self-driving vehicles.

However, as it turns out, computer vision in fin- and insurance is currently a skyrocketing field of knowledge. Every year, we see more and more applications of this technology, and we will explore them in this whitepaper.

Financial and insurance companies that had already noticed the enormous benefits coming from implementing AI modules, now are taking one more step ahead, embracing computer vision technologies.

There are several ways in which computer vision is being deployed in financial services.

> The global computer vision market is expected to grow at a CAGR of 7.7% to reach USD 18.24 billion by 2025.

The financial and insurance industries can significantly benefit from various AI-related technologies, such as machine learning, data analytics, NLP, and computer vision, as it enables companies to enhance processes, reduce costs, and improve customer experiences.

No matter how corny it sounds in 2022, data is actually "a new oil" and even the most traditional sectors are hardly immune to that shift. Effectiveness of data processing can make or break any organization.

- Edwin Lisowski, VP at Addepto

Computer Vision Explained

Computer vision is all about teaching machines, algorithms, and applications to process and recognize what is displayed on a screen or in an image. In other words, computer vision is designed **to interpret visual data with no human assistance.**

Computer Vision vs. Image Processing

COMPUTER VISION

When we talk about computer vision, it is a different story. In computer vision, an image or a video is taken as input, and nothing happens to the file itself. The goal is to interpret the image and its contents.

Computer vision may indeed use some of the **image processing algorithms** to solve its tasks, but processing is never a primary goal. Actually, image processing methods are harnessed for **achieving tasks** of computer vision.

IMAGE PROCESSING

In image processing, an image is, as its name indicates, processed. It means that at least one transformation is applied to an input file. And this can be done by a human with the usage of the dedicated software (to name just **Photoshop, InDesign, GIMP, Gravit, CorelDRAW,** and many more).

How computer vision enhances finance and insurance services?

KYC VERIFICATION

This abbreviation stands for **Know Your Customer.** The KYC process comprises all the procedures designed **to verify the identity, suitability,** and risks involved with maintaining a business relationship with a given person or entity.

Companies utilize KYC processes for the purposes of ensuring their potential customers, agents, consultants, or distributors are anti-bribery compliant and are actually who they claim to be. If you run a financial company, you fully understand how vital KYC verification is.

Unfortunately, today, this procedure is quite time-consuming. At best, it takes several hours to verify one person/entity.

What can computer vision do here?

It can significantly **accelerate** and **automate** this process! We want to show you two real-life examples. Similar solutions can be implemented in your company!

REAL-LIFE EXAMPLES

BBVA

The first example comes from BBVA. This bank allows customers to open an account using a smartphone. During a video call, **a customer verification process** takes place. It's a quick and efficient method.

REVOLUT

A bit different, but still, a similar approach has Revolut. As you probably know, it's a **modern online fintech** with no physical branches.

If you want to open a Revolut account, you have to take two pictures–one of your ID and one of your face.

Next, Revolut's **computer vision algorithms** verify these two images and compare them. If everything seems fine–your account is open and ready to use. If not–you are asked to take additional action in order to confirm your application and identify yourself.

New payment methods and banking data security

Computer vision has everything it takes to help banks remove the need for credit or debit cards. More and more financial institutions worldwide are starting to offer the possibility to withdraw money from the ATM without the need to input a credit card. All you need is a smartphone!

But this begs the question of security, and companies like **Apple, Google, Samsung** and others seem to already have an answer. The mobile devices can be secured by **biometrics verification,** the method based on the physiological characteristics of a given person.

The available biometric authentication features are **fingerprint scanning, face recognition, and iris scanning.** Thanks to it, banking data stored on a device (for example, in the banking app) is **100%** safe–no one other than you can access your phone.

Banks can utilize similar solutions, and, for instance, introduce biometrics verification in their mobile banking apps, to make sure that only an authorized person has access to money and data.

Investment strategies enhanced by the satellite image analysis

Satellite images contain vast amounts of data, especially when it comes to investment purposes.

If a company wants to buy a site for their new commercial or residential building, satellite pictures can tell a lot about the surroundings, and current state of this site.

All of that without the need to go there.

Or maybe another example; let's say a large commercial network wants to build a new store in a given city.

The consumer count for the already existing stores is usable knowledge! With **computer vision** and **satellite imagery**, companies can assess that, based on the number of vehicles in the parking lots.

If you can analyze how many cars park in other competitive stores in this area, it's much easier to assess the investment profitability.

As a result, your company can **reduce the risk** of planned investment.

That's true when we talk about just several pictures, human specialists can do that with ease, but what happens when you have hundreds or thousands of such images?

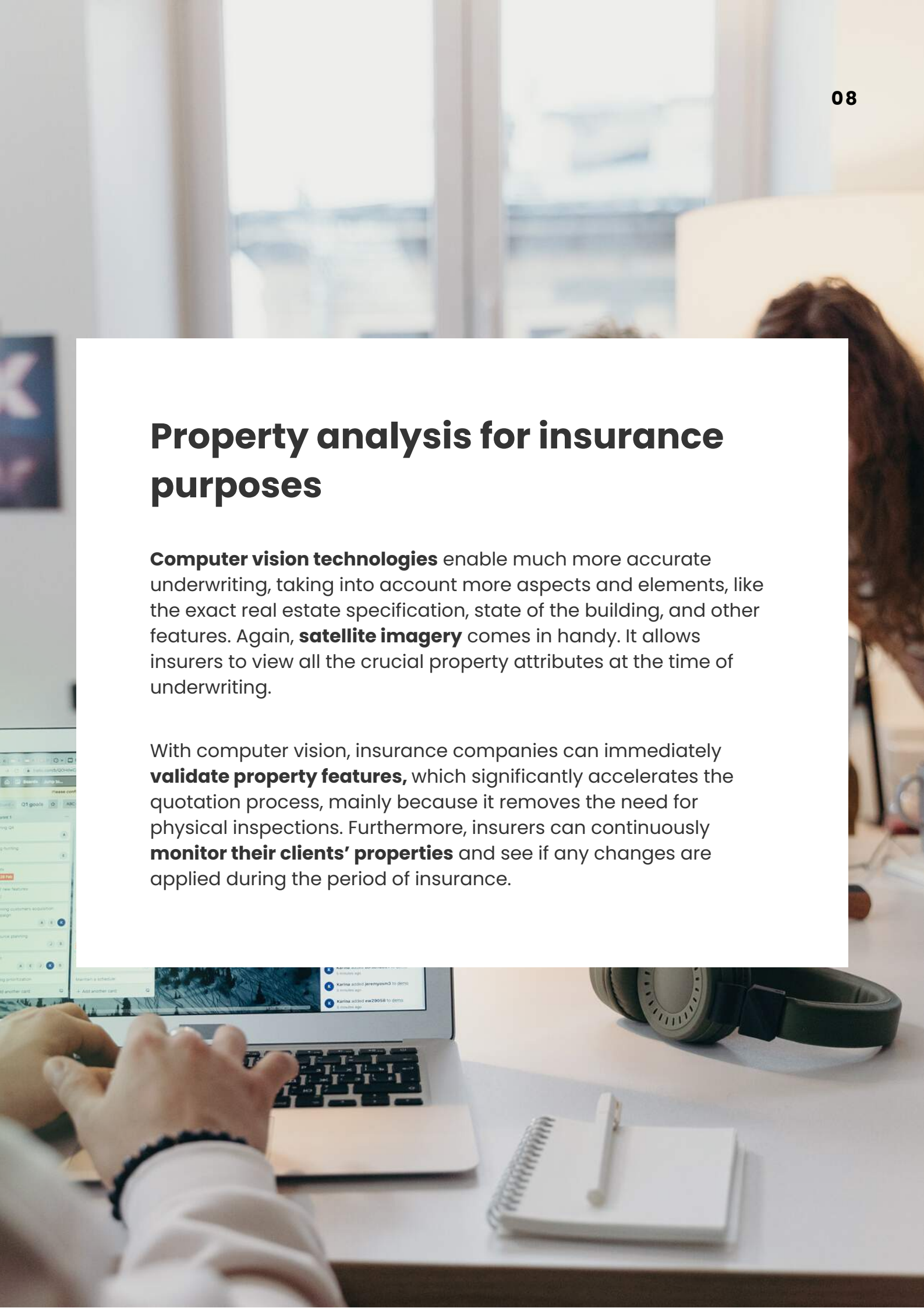
You need **AI** to speed up the entire process. And this is precisely what can be done thanks to **computer vision algorithms.** These algorithms can use geospatial imagery from satellites, UAVs, and airplanes **to obtain priceless insight** into market trends and investment opportunities at the global and regional scales.

ORBITAL INSIGHT

Orbital Insight, **the geospatial data analytics company,** takes satellite data sources and helps its clients **obtain useful business insights** using image processing, machine learning algorithms, and cloud computing.

They offer geospatial intelligence, supply chain monitoring, real estate due diligence, and other services **to make more informed decisions about planned or current investments.**

They claim that they can look at historical satellite imagery and, based on that, **draw useful conclusions** about economic trends in a given state or country.



Property analysis for insurance purposes

Computer vision technologies enable much more accurate underwriting, taking into account more aspects and elements, like the exact real estate specification, state of the building, and other features. Again, **satellite imagery** comes in handy. It allows insurers to view all the crucial property attributes at the time of underwriting.

With computer vision, insurance companies can immediately **validate property features,** which significantly accelerates the quotation process, mainly because it removes the need for physical inspections. Furthermore, insurers can continuously **monitor their clients' properties** and see if any changes are applied during the period of insurance.

CAPE ANALYTICS

Cape Analytics is a **property intelligence company,** based in Mountain View, USA. This company makes it accessible for insurers to diligently verify the state of each property.

They **provide insight** into granular details about properties that materially affect risk, valuation, loss, and probability of any problems. In order to do so, they use structured data extracted from high-resolution imagery using **machine learning.**

Moreover, to make the whole process even more accurate and straightforward, they have a ready-made **database of 110 million** properties across the US.

All of that means **huge savings** for your company! We can expect that the need for human real estate inspectors will be significantly reduced, and insurers will be able to send appraisals much more quickly. We will gladly help you implement **property analysis algorithms** in your company!

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INDUSTRY: AVIATION, AEROSPACE, AND AIRPORTS

CHALLENGE

There are cases of lost passengers' luggage. Our goal was **to find lost luggage at other airports**. The problem is that manual search is a very labor-intensive task because you have to analyze terabytes of videos.

SOLUTION

To solve the existing problem, we created the **Deep Learning model** to find lost luggage. We used **FgSegNet** for background segmentation, and we used Triplet and Siam networks to find luggage (accuracy in the top five is **94%**).

The **final solution** was built in **C ++** with an intuitive interface for users. The solutions work in real-time using Jetson graphics processors.

BENEFIT

The prepared solutions processed terabytes of films within a few hours and are looking for lost luggage with **great accuracy.** It saves **many hours of work** and **optimize airport costs.**

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INDUSTRY: CIVIL ENGINEERING

CHALLENGE

Companies needed to analyze various types of elements in construction areas to automate inventory and analyze the construction areas.

The **main challenge** was **to build a solution** that is able to detect sheet piles regardless of the type and then categorize the type detected by the model on the photos and video.

SOLUTION

We have created a **Computer Vision algorithm** enhanced by **Machine Learning** which automatically detects different elements. Solutions detect a single sheet pile using **object detection algorithms** and then count how many objects are in the photo.

After that objects on the picture are categorized and covered area and inventory calculation is performed.

BENEFIT

Reduced manual effort and **saved time.** The solution could be easily scalable for other different elements.

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INDUSTRY: AGRICULTURE

CHALLENGE

With consumer concerns increasing over **food quality** and **safety,** the food industry has begun to pay much more attention to the development of rapid and reliable food-evaluation systems over the years.

As a result, there is a great need for agriculture companies **to operate effective real-time assessments** for food quality safety during the food production process. So the **main challenge of our client** was the current manual inspection of root rot and tare of freshly harvested beets from breeding stations.

SOLUTION

We **built an application** that has been performing fast and efficient quality inspection of food circuits right on the conveyor belt. **Our customer** has installed an optical sensor above the conveyor belt and uses our image recognition to automate root rot evaluation.

We trained the **machine learning algorithms** to automatically analyze plants that passed through the tape. **The algorithm** sent a signal to the robot that the plant was bad. The **robot automatically** has been removing the plants with the rot.

BENEFIT

Current **manual visual inspection** of root rot and tare of freshly harvested beets from breeding stations has been fully automated.

As a result, it **optimizes labor costs** and **speeds up the whole process.** Created solution-processed terabytes of videos and with **high accuracy** find bad products. It saves a lot of working hours and optimizes company costs.

Key Takeaways

Computer vision can help eliminate many problems that torment modern financial institutions, such as:

- Reducing the amount of paperwork
- Speed up processes

Computer vision is quicker and more efficient than other traditional methods. It helps financial companies automate a multitude of processes. Computer vision also helps **to protect personal and financial data** and protect money against theft.

Finally, computer vision can be used for property valuation or insurance claims verification. All of that can be done quickly and correctly. Utilizing computer vision in your company means **huge time savings** and the improvement of many processes.

Planning a computer vision project?

Let's talk!

Contact Us

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