

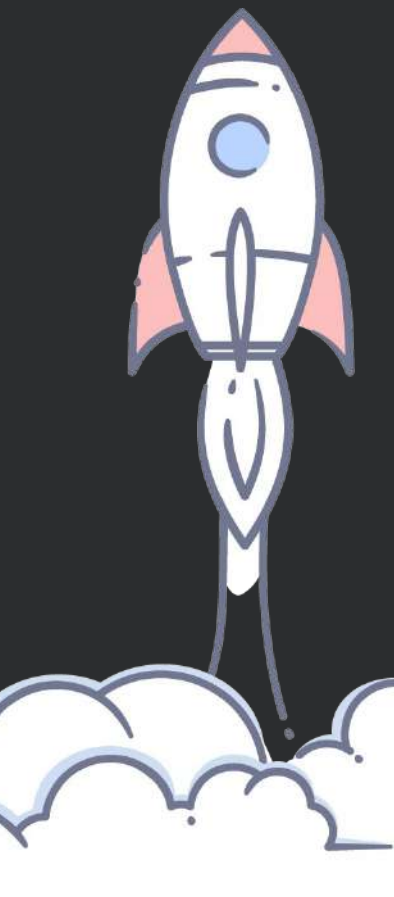
# UNIX Digital ||||

Leading Digital Experiences

# People, Data & Technology

**Digital & Cognitive** Transformation





UNIX Digital combines **innovation**,  
**engineering** and **collaborative**  
**working culture** to transform needs into  
solutions and ideas into products based  
on **technology** and **design**.

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**30+** Years

Creating solutions.

**200+** Collaborators

Thinking from innovation

**7+** Countries

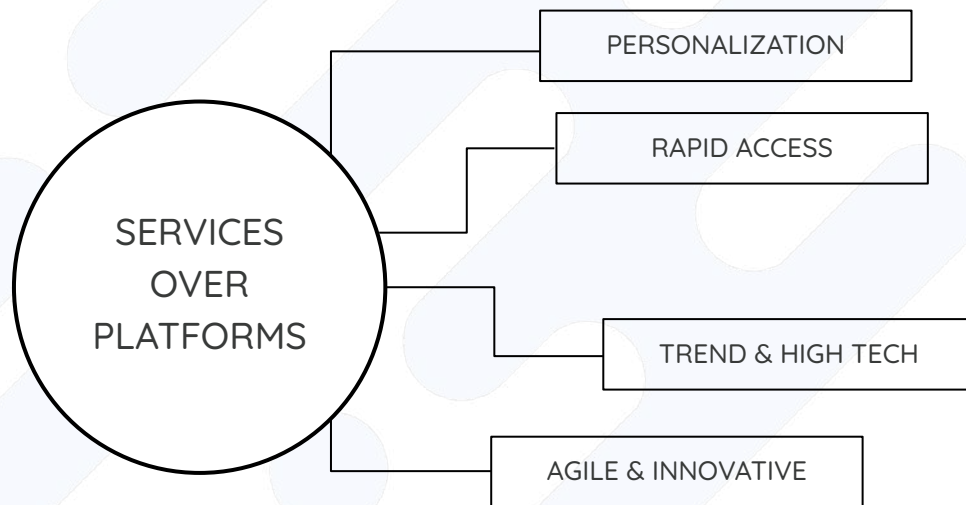
Delivering solutions around the world.

**500+** Projects

Working close to the needs of our customers.

# The Strategy

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# The Capabilities

## Big Data

BD

Ours teams work hard to create meaningful, actionable and timely business insights

## Artificial Intelligence

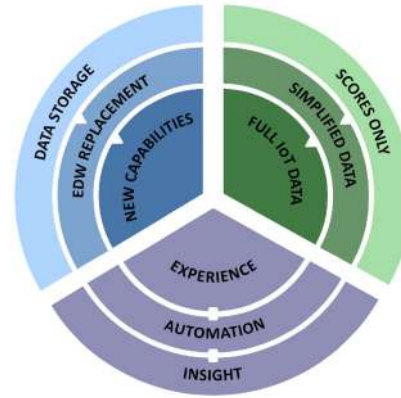
AI

Machine Learning, Patterns Recognitions, Natural Language Processing and much more

IOT

## Internet of Things

New products involving activities, sensors data and processes



All three of these emerging technologies are tightly intertwined

## Internet of Things

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Our focus is to develop the customers ideas into new products involving activities, sensors data and processes. All this will allow us to create new and custom services to manipulate the new set of data.

## Platforms

We provide a complete set of tools to connect, process, store and analyze data in the perimeter and in the cloud. All this in a scalable and fully administrable framework.

## Hardware Integration

Design and hardware integration. Connection between sensors and backend services through devices or hardware.

## Big Data

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We empower our customers with a competitive advantage by unlocking the value of their data. Our teams work hard to create meaningful, actionable and timely business insights.

## Data Science

To understand the data, we provide the mathematical and statistics tools of data science. This includes predictions, optimizations, classifications.

## Data Visualization

As important as the data, it is the way they are visualized. The functionality to deepen data and integrate the view with the tools of Statistics and BI, promotes the ability of end users to obtain information of large volumes of data.



## Artificial Intelligence

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We use modern machine learning services, with pre-trained models and a service to generate your own tailored models. Our teams work on platforms who enables us to derive insight from images/videos with our powerful Patterns Recognitions Practices. We also are proficient on Processing Natural Language to reveals the structure and meaning of text.

## Machine Learning

Machine Learning facilitates the construction of sophisticated learning models on a large scale. We offer modern Machine Learning services, with pre-trained models and a service to generate our own customized models.

## Pattern Recognition

We take advantage of the power of digital signal processing, such as video, images, audio, text or any other type of data; to recognize and understand patterns.

## Natural Language Processing

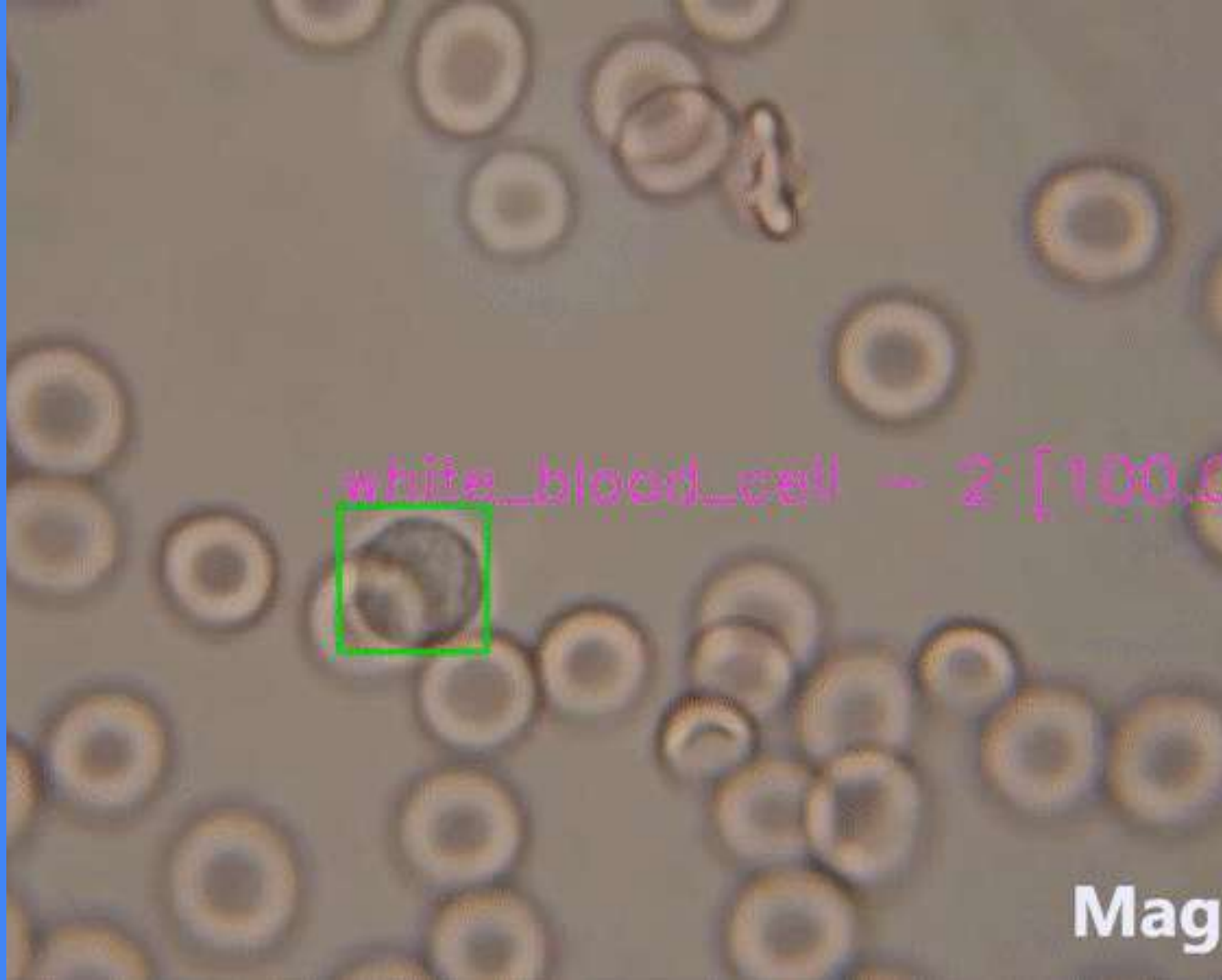
PLN encompasses everything a computer needs to understand and generate natural language (whether written or spoken). Reveals the structure and meaning of the text with powerful models of automatic training.

## What Is the Value of Computer Vision?

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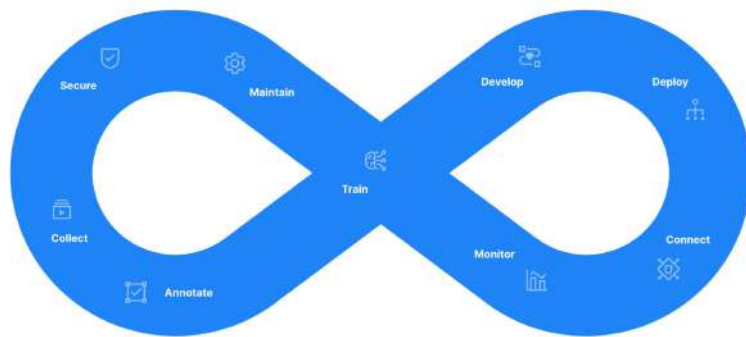
Computer vision systems are trained to inspect products, watch infrastructure, or a production asset to analyze thousands of products or processes in real-time, noticing defects or issues. Due to its speed, objectivity, continuity, accuracy, and scalability, it can quickly surpass human capabilities.

The latest deep learning models achieve above human-level accuracy and performance in real-world image recognition tasks such as facial recognition, object detection, and image classification.



# The Framework

We **build** and **deploy** high-performance computer vision applications **faster** by abstracting and automating the entire lifecycle with our Nvidia based Video Intelligence Framework. Our framework can be deployed in **cloud, on-premise even on the NVIDIA Jetson™ family**, the most newer standard for entry-level edge AI and robotics.



# The Framework



## Edge, On-Premise & Cloud infrastructure

Build high-performance, cross-platform, scale cost-efficient, and robust computer vision solutions across different infrastructure topologies.



## Scalable by-design

Move from prototype to production. Operate large-scale deployments with thousands of cameras. Use automated diagnosis and remote troubleshooting.



## Privacy preserving AI

Build GDPR compliant computer vision, avoid storing or transferring any video data.

## Custom applications

Teams can collaborate to build, deploy, and operate all their computer vision applications in one place.



## Deep Learning

More than +30 pre-trained models ready to use in the apps. Collect training data, annotate the data, and train new Machine Learning models.



## Cost savings

Reduce the sprawl of point tools, drive efficiency and agility. Decrease security risks, and reduce coding work.



# Discover your idea success

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## **Have a better picture of your project and idea**

When you convert your idea into words in our POC Template, you're reviewing your entire concept and finding issues that you wouldn't uncover otherwise. This process also helps you slow down your thoughts and think more clearly about what needs to be done.

## **Quick Feedback**

This is ultimately the most valuable benefit out of a POC. The feedback you will gather will help fine-tune your idea. It will also help you understand if you found a gem.

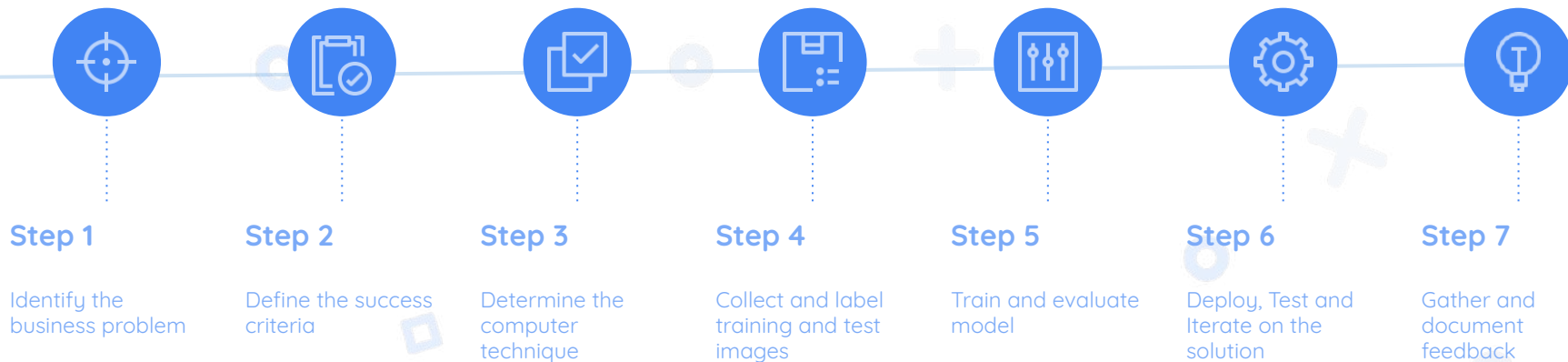
## **Save your money**

A POC helps you save money in two ways:

- It lets you verify if your idea is feasible before putting any significant amount of money into building an MVP.
- By setting the ground for the subsequent phases. It helps clarify the Scope so that you don't spend money on the features and functionalities that aren't required.

# Our Discovery Roadmap

Our seven **key steps** to making the computer vision Proof of Concept a **success**



# Our Discovery Roadmap

- 1. Identify the business problem.** To be successful, a computer vision project should have a clear business goal and benefit. We are able to describe the goal and benefit in one to two sentences, in order to set a clear crystal mindset for everyone.
- 2. Define the success criteria.** The goal here is to translate the business outcome into simple success criteria that can be used to measure the effectiveness of the solution.
- 3. Determine the computer technique.** We identify the right techniques up front will clarify the data requirements and enable our team to focus during the execution phase.
- 4. Collect and label training and test images.** If the scenario is not focuses on one of our more than +30 pre-trained models ready to use, we will need to collect and label data to train a new model.
- 5. Train and evaluate model.** Once we have a good set of images labeled we are ready to shift to model training. In transfer learning, a pre-trained model is repurposed for a new scenario.
- 6. Deploy, Test and Iterate on the solution.** With the model deployed we are ready to interact with the new model in a real-world environment. At this point we start to solicit feedback. Developing a machine learning model is an iterative process of trial and error. If the model is not performing well, there are many steps we can take to improve performance.
- 7. Gather and document feedback.** The gathered feedback lets us verify the usability and feasibility of the solution. It also informs of any needed improvements to the proposed product and gives significant insight for other relevant actions moving forward.

# Our Services

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## Agile Delivery

We provide to you a team of experts developers, who'll provide to you building and production experience in computer vision, video analysis, machine learning, cloud and edge.

- Hands-on solution building support
- Feature planning and testing
- Iterative solution planning

## Agile Project Development

Quickly bring great ideas to life with our team of experts to provide end-to-end full solution services. Our engineers build, optimize and integrate applications with your existing tech.

- Full solution planning and building
- Expert solution configuration review
- Custom add-on integrations



# Our Work



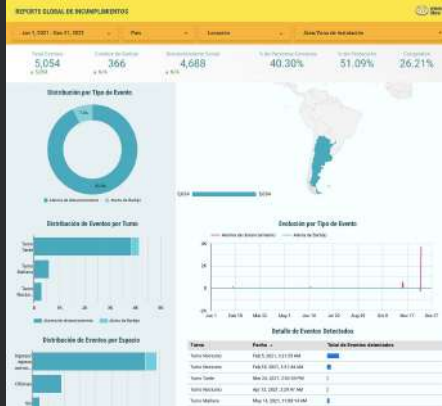
# Security & Safety

## Challenge

Based on the branch of Artificial Intelligence, Computer Vision, and the video processing of security cameras, this project is intended to given the need to guarantee and supervise adherence to the corresponding regulations. Mercado Libre seeks to have a solution that allows the registration of breaches of security measures promoted by said protocol on all sites in Argentina, Mexico, Brazil, Colombia and Chile

## Solution

Our solution? It is based on making available metrics that record breaches and other scenarios in the form of reports using the power of BI and Big Data. Along with the reports, evidence will be captured given the processing of more than 5,000 security cameras, considering different use cases adapted to the needs of each country, such as social distancing, the use of a mask, the security equipment, the work cells, etc. The goal is to provide the MELI Health and Safety Team with the resources to monitor protocol compliance and promote a safe workplace.



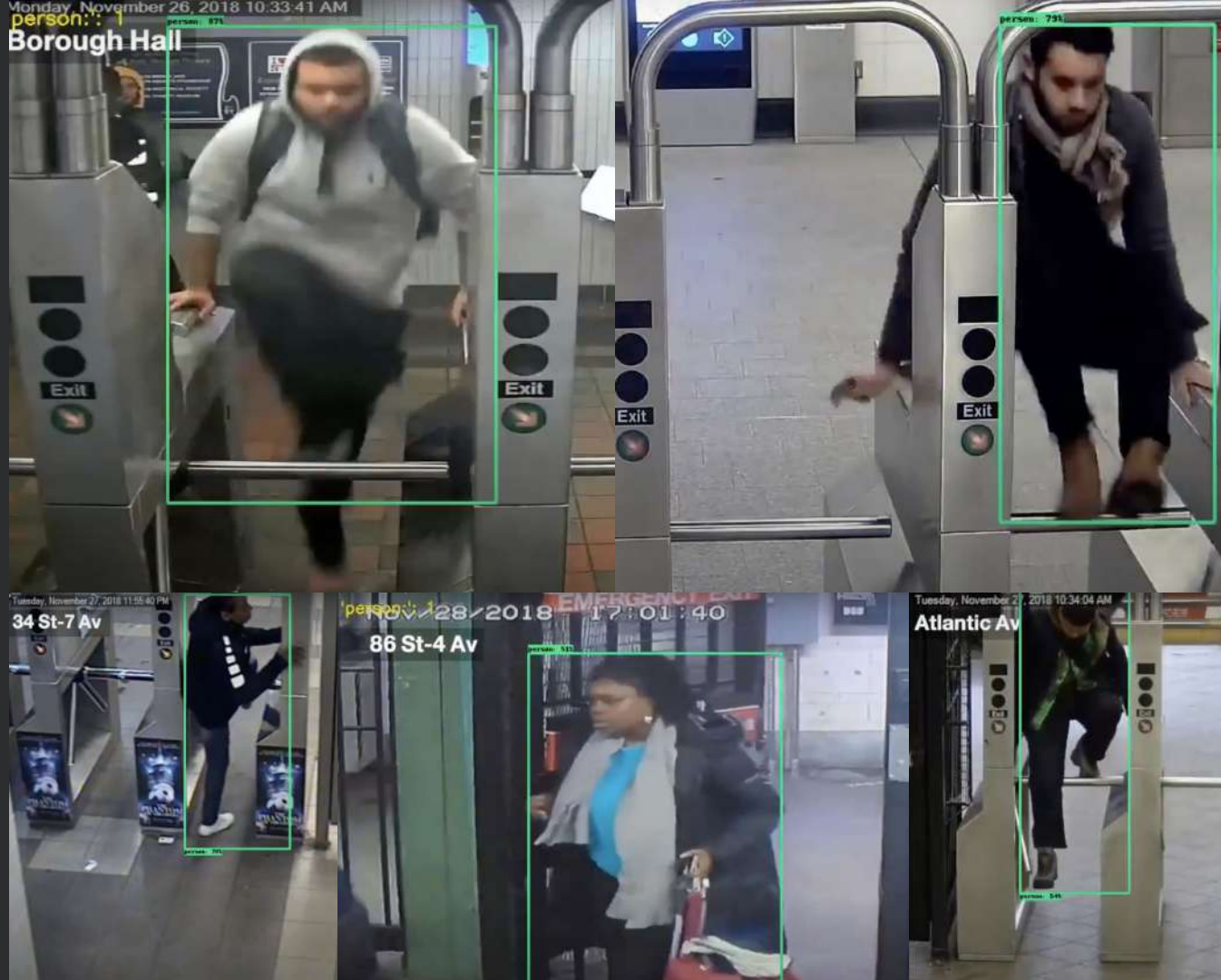
# Transportation & Logistics

## Challenge

As with any public transport service, the level of evasion in the payment of the passage is a problem that concerns different departments within the structure. In the search for an improvement, it is intended to improve the quality of the data that is used as a tool when making decisions.

## Solution

Using the current camera infrastructure, Artificial Intelligence models were incorporated that identify bodily evasion behaviors. These models are able to count passengers in their different flows and addresses, data that intersect with traditional collection services and allow us to infer percentages of evasion in real time. This also allows you to identify passenger flows and make better decisions about frequencies.



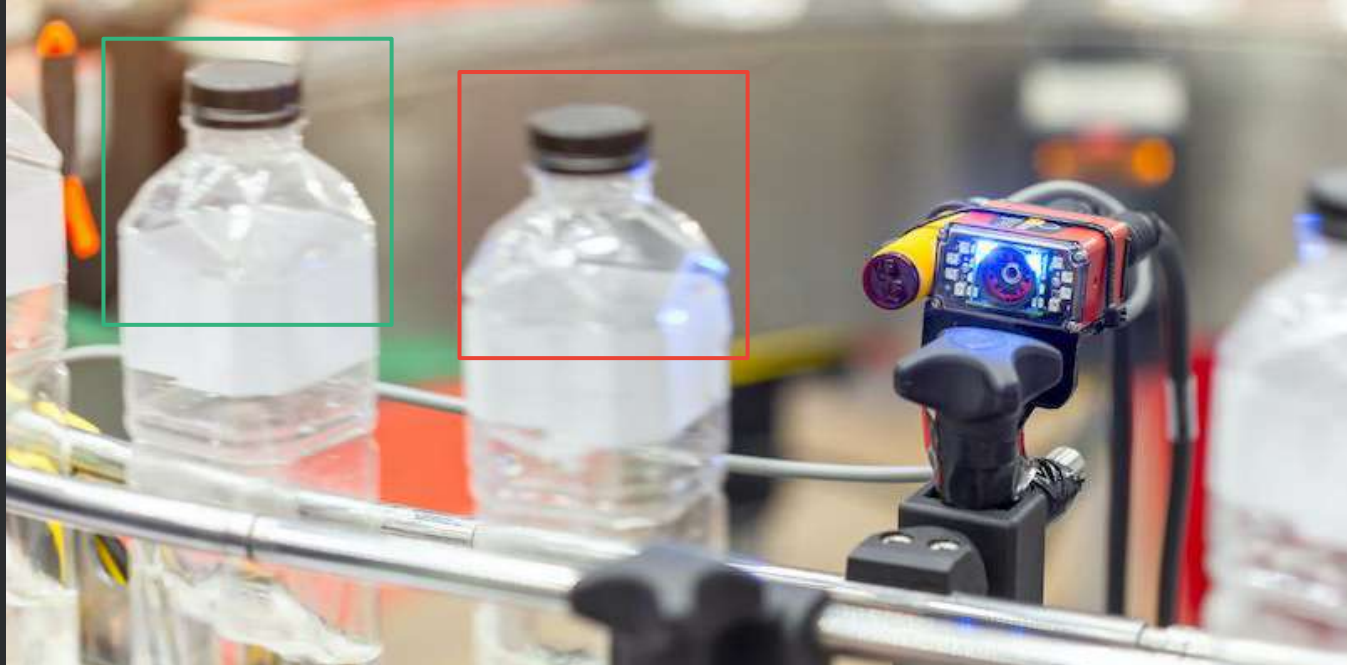
# Manufacturing

## Challenge

Detecting bad quality material in products manufacturing is an error prone & time consuming manual process and results in false positives (detecting a bad one as good one). If a faulty component/part is detected at the end of the production line there is loss in upstream labor, consumables, factory capacity as well as revenue. On the other hand, if an undetected bad part gets into the final product there will be customer impact as well as market reaction. This could potentially lead to unrepairable damage to the reputation of the organization.

## Solution

We automated defect detection on hardware products using deep learning. During the manufacturing processes there could be damages such scratches / cracks which make the products unusable for the next processes in the production line. Our deep learning application detected defect such as a crack / scratch in milliseconds with human level accuracy and better as well as interpreted the defect area in the image with heat maps.





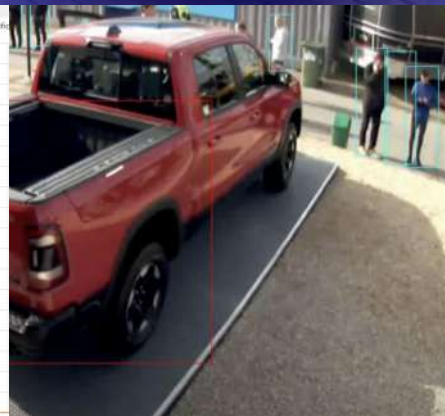
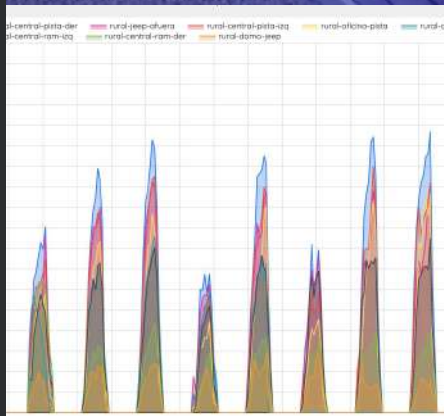
# Customer Experience

## Challenge

Get to know the visitors of certain points of interest better in order to understand their habits and improve the sales conversion rate, using video ingestion and computer vision.

## Solution

Apply Computer Vision to video ingest in order to detect and analyze visitors and their habits, in order to collect and process the data obtained through the use of Machine and Deep Learning.



# Inventory Management

## Challenge

Based on Computer Vision this project is intended to improve the efficiency of the people who do inventory control, freeing their hands and providing greater and better quality of information. Thus reducing times and control points, increasing efficiency.

## Solution

Taking advantage of wearable cameras & advanced computer vision, we facilitate scanning of inventory in any given facility. This provides accurate location information for associates and integrated internal systems & databases.





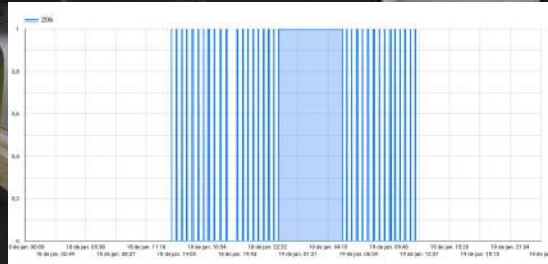
# Transportation & Logistics

## Challenge

Detect the frequency of arrivals and departures of formations in different stations, using video ingestion and computer vision.

## Solution

Using the current camera infrastructure, Artificial Intelligence models were incorporated to identify plates.. Applying Computer Vision to video ingest in order to detect QRs that make patent plates, in order to collect and process the data obtained.



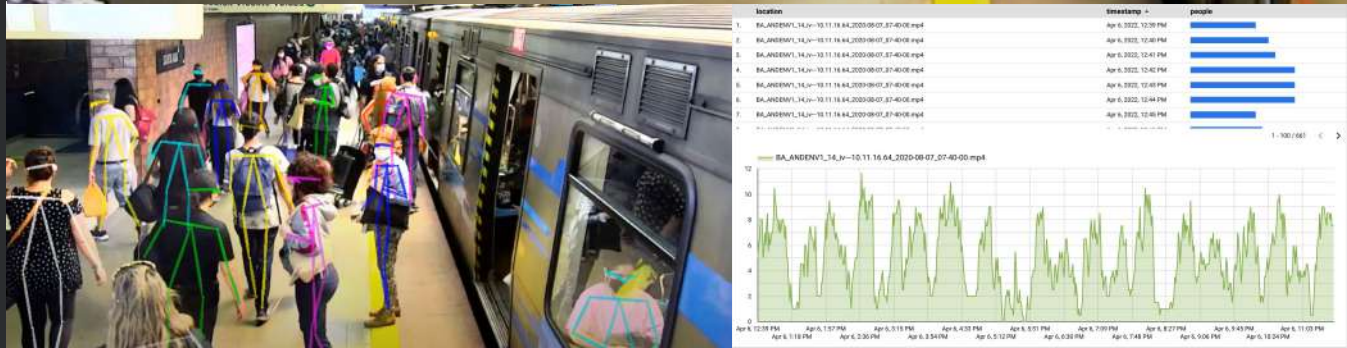
# Transportation & Logistics

## Challenge

The growth of the use of public transport in large cities creates a permanent challenge of better understanding the needs of its passengers. With this premise it seeks to offer a better service based on the modification of the behavior of both its processes and passengers. In this sense, understanding how passenger flows move between different points so that you can modify both the frequency and the crossing is a priority.

## Solution

Without entering large hardware investments and using the current surveillance camera infrastructure, Artificial Intelligence models were incorporated that are capable of generating a real-time origin-destination array of passengers. This allowed you to validate processes and obtain real information so that you could execute the necessary process changes when it came to providing a better service. As an additional addition, the demographics of the passengers are known today and a differentiated service can be offered to each of them.





## Retail

## Challenge

The marketing department was challenged to understand the off-line dynamics of its customers' behavior, and traditional settling surveys were no longer enough to be assertive in their campaigns.

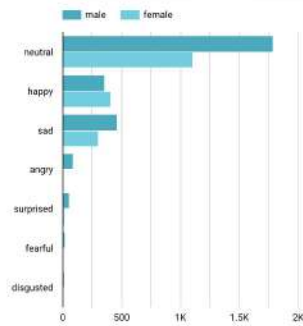
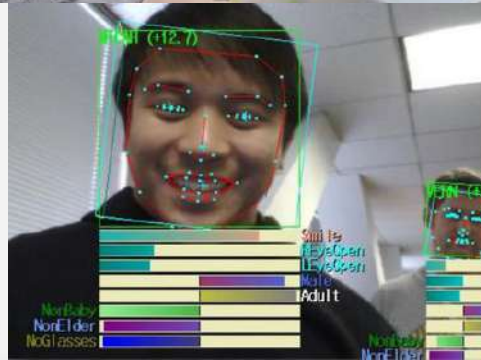
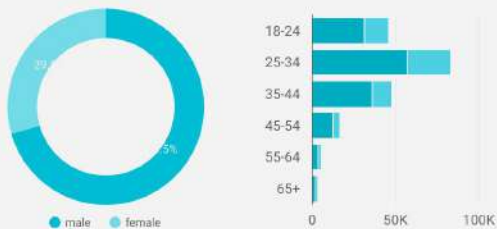
## Solution

The work was done in conjunction with the different departments involved by the client, progress was made on the implementation of models of Artificial Intelligence that through cameras are able to identify the demographics, the sensations of the individuals and the attention that customers put to the different products of the brand and the competition. All this information is processed in real time allowing you to have high quality insights for decision-making based on an unprecedented amount of information.



## Engagement by Age &amp; Gender

Showing the number of user over the past 30 days



# Retail

## Challenge

The marketing department was challenged to understand the Customer Behavior Analysis in order to create better and custom offers increasing the rate conversion.

## Solution

The solution was based on the current video infrastructure, capturing and tracking customer activity, optimizing the customer experience, saving operating costs and increasing sales with AI vision Analytics. Getting and processing data related to several points of interest

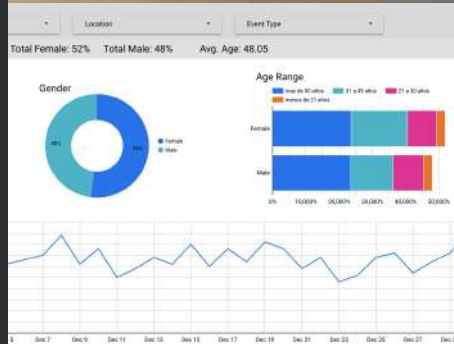
\* Automatic and contactless people counting without the need for physical tracking devices, costly installation, and maintenance.

\* Common surveillance cameras can be used for people counting, making the method comparably easy to implement, even in large-scale use cases.

\* Increased safety of customers and workforce by ensuring compliance with government regulations, for example, related to COVID-19 measures.

\* Actionable insights to estimate the number of people in retail stores in real-time, discover peak hours, bottlenecks and compare key metrics across different locations.

\* Leverage insights by sending data to third-party systems and visualizing it in dashboards.





# Government & Smart City

## Challenge

Together with other humanitarian organizations, management distributes +2 million daily food rations to people with shortages. There are also +3500 delivery points distributed throughout the country. The efficient and orderly delivery of these foods is a permanent opportunity for innovation and creativity of the design of the processes involved.

## Solution

After understanding the logistics processes, a mobile application was developed for the registration of the delivery of rations and the people involved in the process. Face Recognition validates that a person is registered at the point of delivery and at the same time if they have already benefited. In this way you can have in real time the information necessary for the replenishment of the delivery points, as well as the indicators necessary to understand the scope of the profit.







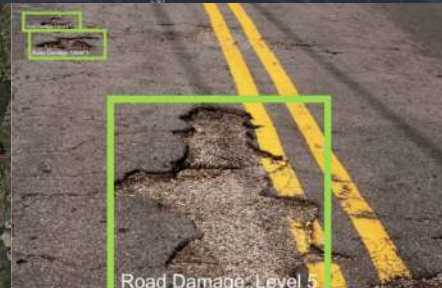
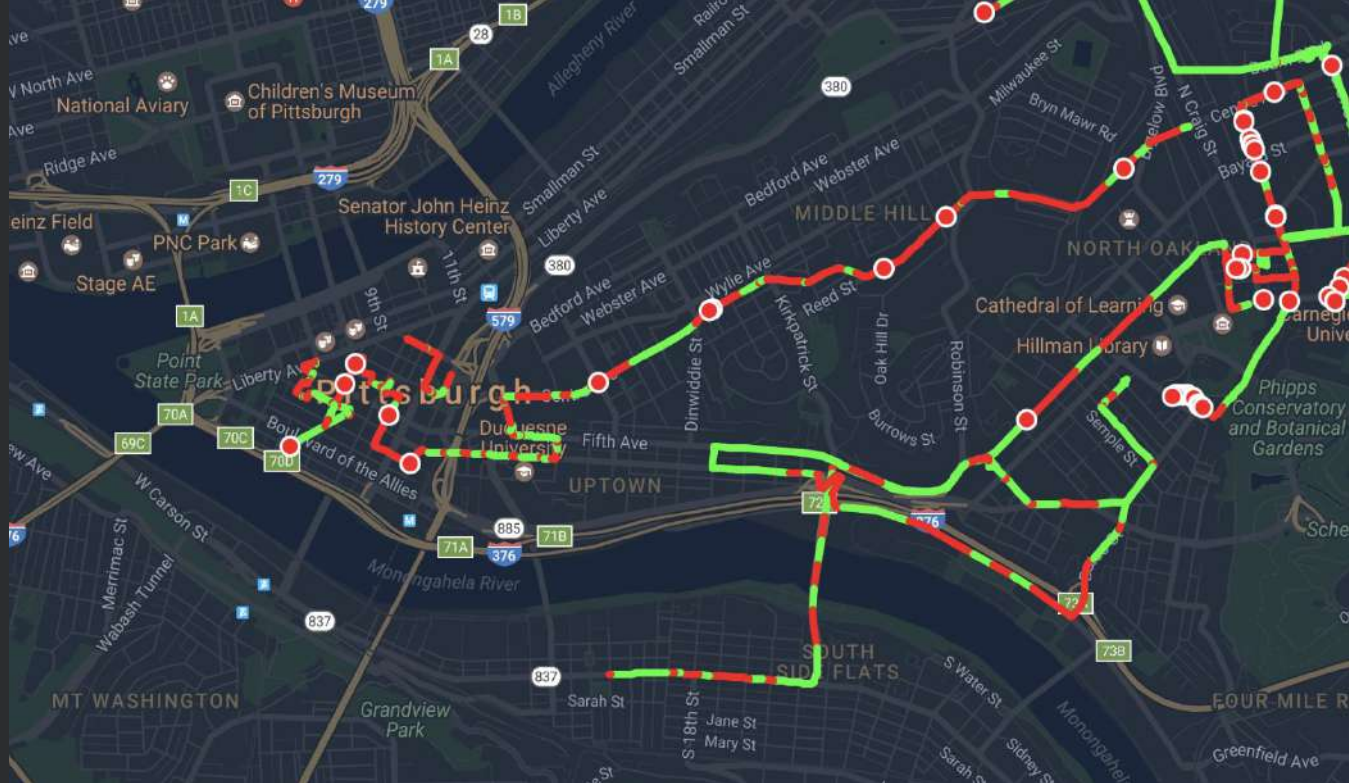
# Government & Smart City

## Challenge

Under the premise of effective use of resources, management had the need to understand how to prioritize the work of repairing the streets within the territory.

## Solution

The challenge was a big thing! Using Artificial Intelligence models mounted on a mobile solution it was possible to detect the different types of incidents that affect the state of the streets. With this it was possible to map the incidents and their severity, making available to management a powerful tool to evaluate the priority of the tasks as well as to be able to better understand the functioning of the city.



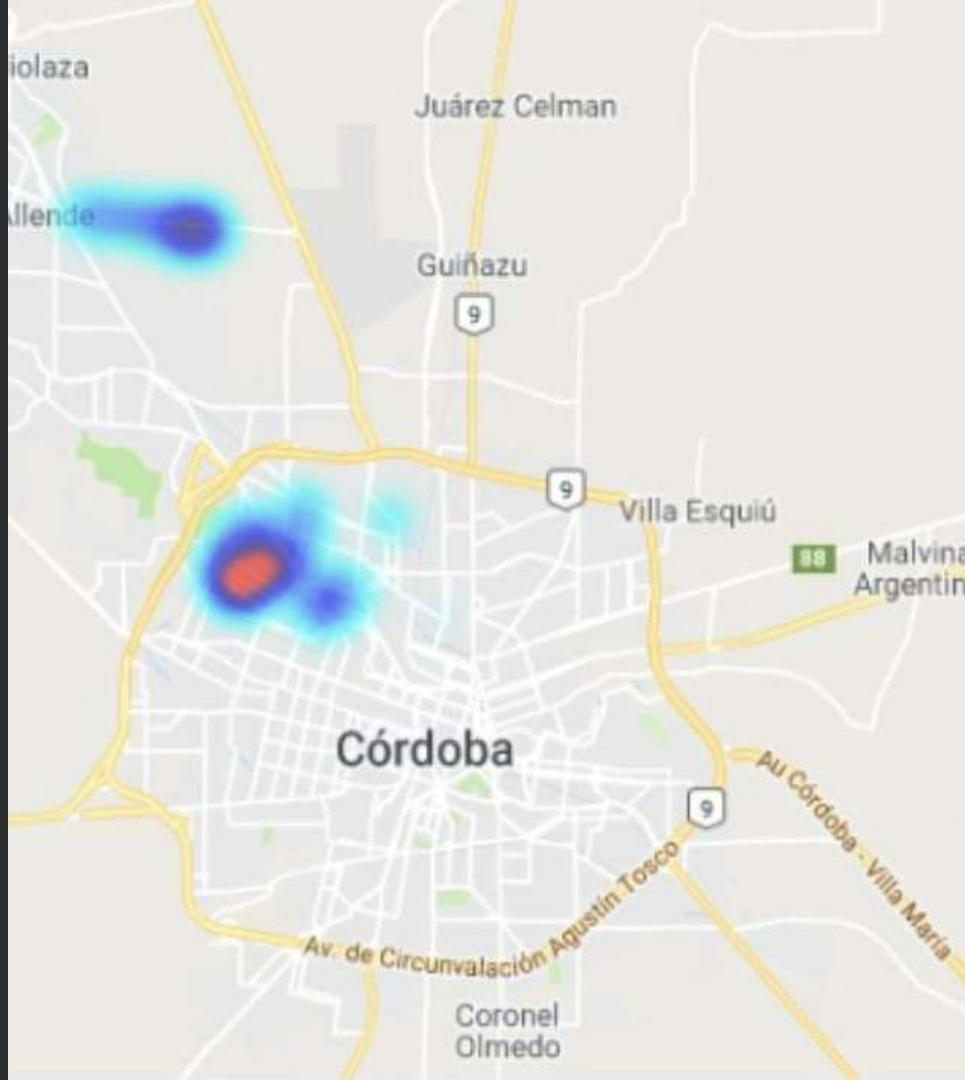
# Government & Smart City

## Challenge

Under the premise of the effective use of resources, management had the need to understand how to prioritize the work of installation/repair of the luminaire within the territory.

## Solution

Considering the challenge of finding a low-cost solution that can encompass such a large urban area, the creation of portable light-sensitive devices was implemented. The devices can be connected to any type of vehicle and are reporting their measurements, both online and offline, allowing the generation of real-time maps about the luminosity of the city. In this way you can clearly and accurately have the information necessary to manage resources in the best way.




# Thanks!

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You can find us at  
**hello@unxdigital.com**




**CÓRDOBA, AR**  
+54 351 5611000  
José Baigorri 653  
CP X 5001 AJM



**HOUSTON, US**  
+1 713 595 300  
2100 West Loop South,  
Suite 900 Of.920  
TX 77027



**BUENOS AIRES, AR**  
+54 11 6091 0000  
Av. Leandro Alem 1050 Piso 9, CABA  
CP C1001AAS



**ASUNCIÓN, PY**  
+595 21 673175  
Aviadores del Chaco 3802  
CP 1827

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