WHITE PAPER

Sense the AI revolution:

How AI-powered 3D sensors boost in-store analytics

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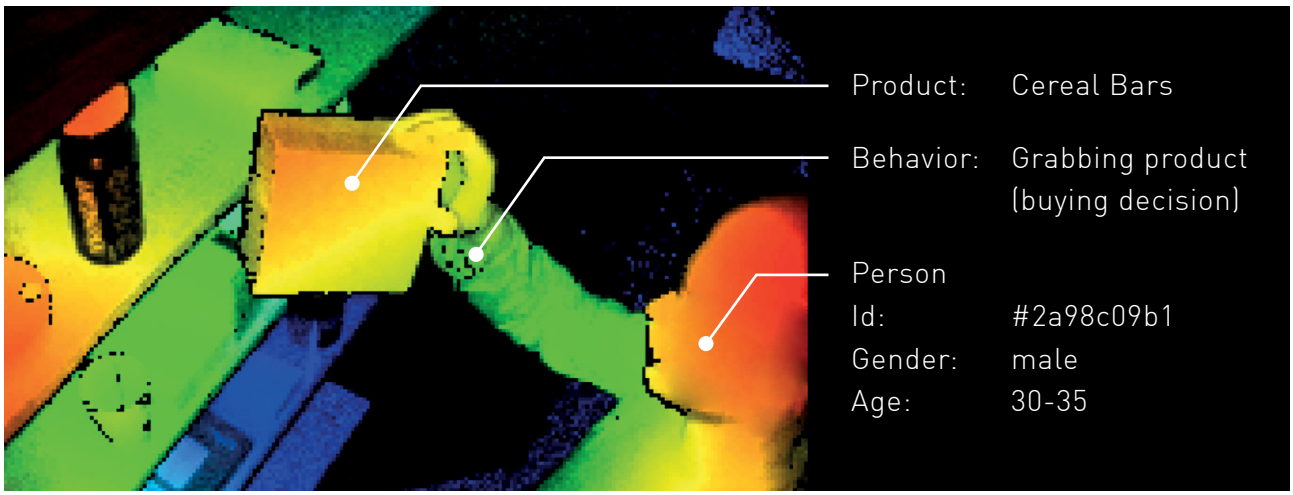
HOW AI-POWERED 3D SENSORS BOOST IN-STORE ANALYTICS

The retail industry faces inside and outside pressure. While competition is among the strongest of all industries, online alternatives rival brick-and-mortar sales. New strategies are in need to make the most of the sales floor, capitalizing on in-store analytics and digitized business models. The data gathered with a high precision AI-powered people counting and tracking technology lays the foundation for comprehensive in-store analytics.

WHAT IS AI AND HOW DOES IT DIFFER FROM TODAY'S TECHNOLOGY?

Artificial Intelligence (AI) describes the ability of a system to perceive its environment. It makes decisions or takes actions based on its understanding of the situation. In computer science, AI is equated with a new kind of algorithms. These follow a completely different problem-solving logic compared to traditional algorithms. Current computers make decisions by evaluating inputs against a set of previously stipulated rules. The solution for the problem needs to be stated in a fixed set of parameters. Such a constricted set of rules limits the capability to classify a variety of inputs.

New AI approaches overcome the limitations of hard-coded binary rules. In particular, Deep Neural Networks (DNNs) feed inputs into a dynamic network of solutions. This network builds itself by learning inputs and resulting outputs. Well designed and trained AI algorithms are very powerful and adaptable. They can identify a connection between even vague inputs and target patterns. Therefore, the key behind DNN algorithms is not only their design. As in the human brain, perception and classification of new situations depend on the quality and intensity of training.



AI-powered Xovis 3D sensors pave the way for cashier-free stores as gobal standard

WHY IS AI CRUCIAL TO CUSTOMER INTELLIGENCE IN RETAIL?

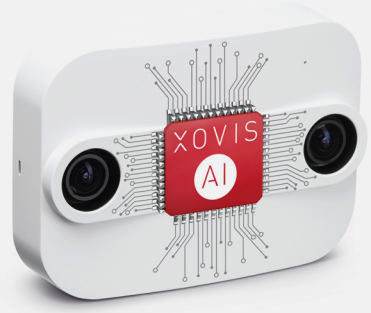
In the retail industry, sensors and algorithms help improve the understanding of customer behaviour. Currently, 3D sensor deliver a rather trivial set of KPIs accurately. Systems count entering and exiting visitors or measure dwell times in the store. Not only does AI further increases the data accuracy of these established KPIs, but also enables to gather completely new data for analytics inside the store.

On the one hand, AI boosts data quality of established KPIs. With reliable 3D sensors, it is relatively easy to determine if an object of the shape and height of a person is moving in a certain direction within a store. Current algorithms rely on predefined attributes (e.g. volume and height) to classify an object as a person or not. As shape and height of persons walking through the store vary considerably, the supported range of these attributes is kept wide. As a result, counting accuracy in challenging, crowded situations still leave room for improvement. That's where AI-powered 3D sensors excel.

UNPRECEDENTED INSIGHTS THROUGH AI BASED IN-STORE ANALYTICS

On the other hand, AI enables entirely new ways of in-store analytics. Most notably, AI-powered 3D sensors track individuals throughout their journey within a building, store, etc. Present mathematical models try to predict a person's movement from one image frame to the next. These predictive models work well as long as the sensors have an uninterrupted view on the persons and are able to precisely measure their location. In reality, this is not often the case. More typically, persons are occluded by shelfs or other persons, they kneel down to reach lower shelfs, etc. Today's tracking systems suffer from these irregularities and are likely to lose track in many situations. The results are incomplete tracks that distort the data for customer journey analytics. AI-powered 3D sensors are able to provide complete tracks, even in the absence of continuous visibility. These precise and uninterrupted tracks finally render the data for in-store analytics highly precise and meaningful.

Furthermore, AI opens the door for future dimensions of customer behavior analysis. In the age of stores with automated, unstaffed check-out facilities, AI-powered 3D sensors detect, when a person grabs an article from a shelf, puts it back or makes a buying decision. AI is the key to taking cashier-free stores from the trial stage to becoming a global standard.



New PC2S and AI-upgrade for PC2R

AI-powered Xovis 3D sensors in combination with Xovis SPIDER processing unit enable unprecedented customer behavior analytics.

In January 2018, Xovis launched the PC2S, a fully AI-powered person tracking sensor. The PC2S will be available for purchase from May 2018.

Released in 2017, the PC2R will be upgraded with AI-powered firmware in May 2018.

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9 REASONS WHY AI-POWERED XOVIS 3D SENSORS OPEN THE DOOR FOR NEW DIMENSIONS OF IN-STORE ANALYTICS

- In-store analytics empower brick-and-mortar stores to keep up with the online competition
- The required data for sophisticated in-store analytics is based on AI-powered Xovis 3D Sensors to count and track people continuously
- Current people counting/ tracking algorithms rely on predefined attributes
- Challenging, crowded situations still leave room to improve counting accuracy
- Mimicking person recognition as performed by humans, AI boosts accuracy of data
- AI-powered Xovis 3D Sensors enable precise customer journey analytics even despite occlusion
- AI is the retail industry's key to making cashier-free stores a worldwide standard
- Our focus on algorithmic research and in-house sensor manufacturing account for Xovis' unique capability to perform seamless full area tracking
- Xovis 3D Sensors and Xovis SPIDER process all data on board and make investments in external computing capacity obsolete and guarantee data privacy

Xovis 3D Sensors and software solutions empower our customers to perform full area tracking with the Xovis Multisensor. The embedded system features direct image processing and high AI data flows. Developed and produced in-house, Xovis products open the door for unprecedented retail applications.

ABOUT THE AUTHOR

Cyrill Gyger is VP Products at Xovis. As interface between research & development and sales, Cyrill and his team make sure that the Xovis product strategy reflects the customer's point of view.

Xovis is the market leader in people flow monitoring. More than 50 international airports and numerous major brands in the retail industry count on the Swiss-based company. They use Xovis 3D Sensors and software solutions to move people more smoothly through their facilities, optimize resource planning and increase customer satisfaction.