

## Providing proof of sort: Computer vision prevents errors in manual sorting processes

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Errors in warehouse sorting cost money and have a negative quality impact, so logistics services aim to minimise them as much as possible. Mistakes usually occur at the edges of sorting automation systems, where workers manually move parcels from chutes into cages ready for transport to loading areas. Now, computer vision is offering a way to reduce errors without loss of efficiency, providing a real-time process quality checks without any additional steps.

*Lars Pruijn, Innovation Director at Prime Vision, explores how computer vision is providing proof of sort, streamlining manual processes like never before.*

### Why proof of sort is important

Once a parcel has travelled through a sorting system, it ends up in a chute where workers will take the parcel, read the address label or scan the barcode, then place it in a cage ready for transfer to a buffer zone or loading area. Each cage corresponds to unique destination, so it's vitally important that a parcel ends up in the right cage.

As is the way with manual processes though, this is not always the case. Parcels can be mistakenly placed in the wrong cages, which takes time to rectify, incurs additional costs – especially if the item ends up in the incorrect delivery van, and often negatively impacts the service provided to the customer. To avoid this

outcome, operators need a system to confirm that a parcel has been sorted to the correct destination. This is known as proof of sort.

### **Quality checks without additional steps**

Some companies approach this by requiring workers to scan a barcode on the parcel and the respective cage it is placed in. While viable, the problem is that it's an extra step in the process, which is inefficient and inconvenient. For facilities that are processing high volumes, this is not ideal.

Thankfully, modern advances in computer vision are providing a better solution without additional handling. Cameras can read the barcode on an item, with the visual data then used to identify the correct cage. If a parcel is loaded into the wrong cage, the computer vision system detects this and sends an immediate alert to workers via a screen, light or audio cue so the error can be rectified before the item leaves the area. This automatic process quality check provides visual evidence that a parcel is in the right or wrong place without any additional manual handling.

### **Viewing other possibilities**

A computer vision proof of sort system presents additional possibilities as well. The system can count the items in a cage, detecting if it is full or not. Computer vision also allows operators to measure the efficiency of the process, which can be used to identify improvements. It's highly suitable for non-conveyable items too, which are handled manually as they are incompatible with automated sorting systems.

Along with the granular process quality checks for each parcel, computer vision can track the cages themselves. In the next stage of the process, these cages are usually placed in buffering areas manually, so it's not uncommon for cages to be moved to the wrong loading or buffering areas by accident. By positioning additional cameras in these areas, operators can confirm that cages have arrived in the right place, and if not, react quickly to rectify the issue.

## **Real-world implementation**

The assumption with an automated system is that it requires lots of hardware, but for computer vision, this simply isn't the case. Relatively cheap cameras with a wide field of view can be used. By focusing on specific process areas and destinations where parcels and cages will arrive, there is no need to cover the entire facility in cameras to achieve accurate tracking. Server requirements are not onerous either, with system designers now localising computing within the footprint of the cameras themselves and connecting to wider warehouse infrastructure via Wi-Fi. Ultimately, it's a system with a low impact on existing facilities.

These systems are not just theoretical – they are being piloted in real-world processes. Following an in-house testing process, Prime Vision is working with customers in warehouse sorting to develop computer vision proof of sort systems in operational circumstances. This collaborative stress test of the technology is accelerating development, tailoring the system to customer needs and perfecting functionality ready for eventual productisation.

The focus isn't just on process improvements either; the system is designed to be ethical. Placing cameras across facilities compromises personal privacy and violates General Data Protection Regulation (GDPR) in the EU and UK – so Prime Vision has ensured that the system tracks parcels, not people. It achieves this by completely blanking out workers in camera images, ensuring that personal privacy is protected.

## **Seeing the benefits**

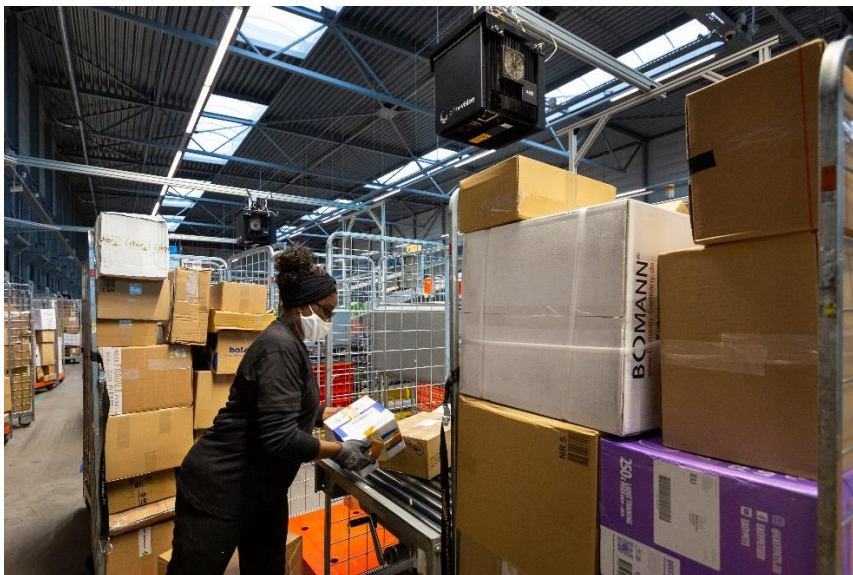
Computer vision systems offer e-commerce and logistics companies a way to conduct real-time quality checks for manual sorting processes. Simply by using cameras, operators can reduce errors and improve efficiency, saving time and cost. High quality visual data not only provides proof of sort but measures other metrics to identify improvements, all while protecting personal privacy and avoiding big

changes to facility infrastructure. In these sorting applications, it's not hard to see the benefits that computer vision can provide.

More from Prime Vision: <https://primevision.com/providing-proof-of-sort-computer-vision-prevents-errors-in-manual-warehouse-processes/>

**Image captions:**

**Image 1:** Computer vision is offering a way to reduce errors without loss of efficiency, providing a real-time process quality checks without any additional steps.



**Image 2:** Once a parcel has travelled through a sorting system, it ends up in a chute where workers will take the parcel, read the address label or scan the barcode, then place it in a cage ready for transfer to a buffer zone or loading area.



**Image 3:** Automatic process quality checks provide visual evidence that a parcel is in the right or wrong place without any additional manual handling.

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**About Prime Vision**

Prime Vision is a global leader in computer vision integration and robotics for logistics and e-commerce. As an award-winning company, Prime Vision designs and integrates solutions using the latest recognition, identification, and robotics techniques to optimize the automation of sorting processes.

Headquartered in Delft, The Netherlands, more than 170 experts provide comprehensive market and domain knowledge to digital companies around the world.

For more information, visit <https://primevision.com/>

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