

AI pallet sorting

Using an automated software that can sort based on image the different standards of europallets.

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Context of use: Education
Level of education: Bachelor

Technology Impact Cycle Tool

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Impact on society

What impact is expected from your technology?

What is exactly the problem? Is it really a problem? Are you sure?

The problem that this product would solve is limited to better and more efficient warehouse management.

Are you sure that this technology is solving the RIGHT problem?

Yes. For warehouses that are not vertically integrated in much bigger cash rich companies that can afford to just create a top down solution with only branded standard pallets. This technology will help breach that gap.

How is this technology going to solve the problem?

It will replace the manual work of validating pallets by hand to make sure they are compatible with other automated warehousing solutions.

What negative effects do you expect from this technology?

Some maintenance costs, hosting/storage costs, licensing costs.

In what way is this technology contributing to a world you want to live in?

It improves efficiency in warehouses which power the world of today. Speeds up validation of pallets.

Now that you have thought hard about the impact of this technology on society (by filling out the questions above), what improvements would you like to make to the technology? List them below.

Long term the solution can be streamlined to be easier to deploy at scale. For instance using the first sites where it's deployed to gather enough labeled images for a dataset to train an AI model to do the recognition.

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Hateful and criminal actors

What can bad actors do with your technology?

In which way can the technology be used to break the law or avoid the consequences of breaking the law?

It can't as it only has one simple goal and function. The worst case scenario would be the dataset of validated pallets to be stolen.

Can fakers, thieves or scammers abuse the technology?

They could improve their fake pallets to pass this validation technology which would mean they make better pallets.

Can the technology be used against certain (ethnic) groups or (social) classes?

No.

In which way can bad actors use this technology to pit certain groups against each other? These groups can be, but are not constrained to, ethnic, social, political or religious groups.

It is just validating pallets.

How could bad actors use this technology to subvert or attack the truth?

N/A

Now that you have thought hard about how bad actors can impact this technology, what improvements would you like to make? List them below.

Store as little data as possible while not hindering the running.

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Privacy

Are you considering the privacy & personal data of the users of your technology?

Does the technology register personal data? If yes, what personal data?

No.

Do you think the technology invades the privacy of the stakeholders? If yes, in what way?

No.

Is the technology is compliant with prevailing privacy and data protection law? Can you indicate why?

Yes, the only data it stores are the images of the pallets if we decide they are needed, identification code of the pallet and identified pallet type.

Does the technology mitigate privacy and data protection risks/concerns (privacy by design)? Please indicate how.

Yes, by only storing the minimal required data to work.

In which way can you imagine a future impact of the collection of personal data?

no personal data stored.

Now that you have thought hard about privacy and data protection, what improvements would you like to make? List them below.

Store as little data as possible to limit costs but also risks of that data being stolen.

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Human values

How does the technology affect your human values?

How is the identity of the (intended) users affected by the technology?

It replaces a time consuming task that a warehouse worker would have to do manually with a faster and safer way to do it as the worker doesn't have to get too close to the pallets anymore to validate them. This empowers the employee to be safer, take less risks and validate more pallets.

How does the technology influence the users' autonomy?

The technology empowers the worker to do their job better, and allows a little more time to think about a pallet they are trying to validate without slowing the process down.

What is the effect of the technology on the health and/or well-being of users?

It automates a manual task and takes users out of harm's way between the pallets in a warehouse.

Now that you have thought hard about the impact of your technology on human values, what improvements would you like to make to the technology? List them below.

Make it easy to use.

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Stakeholders

Have you considered all stakeholders?

This category is only partial filled.

Who are the main users/targetgroups/stakeholders for this technology? Think about the intended context by answering these questions.

Name of the stakeholder

warehouse worker

How is this stakeholder affected?

His work will get restructured into a new way of working which should make it easier to validate the pallets.

Did you consult the stakeholder?

No

Are you going to take this stakeholder into account?

Yes

Name of the stakeholder

IT department

How is this stakeholder affected?

They will have one more software to manage rights requests and functionality of the software on the machines it is deployed on.

Did you consult the stakeholder?

No

Are you going to take this stakeholder into account?

Yes

Did you consider all stakeholders, even the ones that might not be a user or target group, but still might be of interest?

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Now that you have thought hard about all stakeholders, what improvements would you like to make? List them below.

A way to calibrate or validate the tool would be interesting. Also role management shouldn't be too hard.

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Data

Is data in your technology properly used?

Are you familiar with the fundamental shortcomings and pitfalls of data and do you take this sufficiently into account in the technology?

Yes, however what we will store is just the approved images of the pallets for further training and improvement of the model.

How does the technology organize continuous improvement when it comes to the use of data?

Audits will be part of the validation tool maintenance, and samples will be validated again to ensure no hardware/software issue is corrupting the data. This feedback will also be used to improve the software doing the validation.

How will the technology keep the insights that it identifies with data sustainable over time?

no plans on selling the data, the main initial goal is to validate the pallets with the initial trained model and use the submitted images that are approved to retrain to improve the accuracy.

In what way do you consider the fact that data is collected from the users?

we don't gather any user data, the first pilot programs will be given discounts/trials for helping in the process of development.

Now that you have thought hard about the impact of data on this technology, what improvements would you like to make? List them below.

being aware and very precise in what data is store, where, how and for how long. To avoid extensive data breaches.

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Inclusivity

Is your technology fair for everyone?

Will everyone have access to the technology?

Yes, all warehouses can use this technology. And it has enough flexibility to be adapted where needed.

Does this technology have a built-in bias?

No.

Does this technology make automatic decisions and how do you account for them?

This technology validates pallets based on submitted images and tries to recognise if the submitted image includes a pallet or more and the warehouse manager needs to validate the outcome of the model.

Is everyone benefitting from the technology or only a small group?

Do you see this as a problem? Why/why not?

It is only disruptive in the sense that warehouses will be closer to full automation.

Does the team that creates the technology represent the diversity of our society?

Yes.

Now that you have thought hard about the inclusivity of the technology, what improvements would you like to make? List them below.

Give it a more generic name? as europallets sounds like an euro centric name?

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Transparency

Are you transparent about how your technology works?

Is it explained to the users/stakeholders how the technology works and how the business model works?

Yes, it is also important that they understand how it works so that they know where the solution can be installed properly to ensure best working conditions.

If the technology makes an (algorithmic) decision, is it explained to the users/stakeholders how the decision was reached?

yes, pretty straightforward.

Is it possible to file a complaint or ask questions/get answers about this technology?

Yes, all feedback is used to improve the solution and figure out what failed/ isn't working.

Is the technology (company) clear about possible negative consequences or shortcomings of the technology?

yes, given the wrong images the validation could fail as the model might not find the pallet in the image if there aren't any.

Now that you have thought hard about the transparency of this technology, what improvements would you like to make? List them below.

Make the product be simple to grasp and also use with a short and not steep learning curve.

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Sustainability

Is your technology environmentally sustainable?

In what way is the direct and indirect energy use of this technology taken into account?

By choosing a cloud provider that can scale based on real use, we limit our energy usage to the minimum required to keep the service working with minimal overhead.

Do you think alternative materials could have been considered in the technology?

As it has a SaaS and PaaS option only the needed parts can be chosen by the customer of the solution to minimise the impact on the environment.

Do you think the lifespan of the technology is realistic?

As main part of the solution is software, it can evolve with the needs that it's addressing.

What is the hidden impact of the technology in the whole chain?

it should relieve some of the headaches related to compatibility of pallets, make warehouse management have a few less problems.

Now that you have thought hard about the sustainability of this technology, what improvements would you like to make? List them below.

Make sure that future versions of the solution is compatible with the system in place to assure improvements.

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Future

Did you consider future impact?

What could possibly happen with this technology in the future?

It could get upgraded to be easier to integrate with ERP systems like SAP to automatically manage the results of the validation from within SAP.

Sketch a or some future scenario (s) (20-50 years up front) regarding the technology with the help of storytelling. Start with at least one utopian scenario.

In 20 years I imagine that most pallet solutions that remain are standardised and with some sort of ID chip that identifies their exact measurements, compounds and other materials used and their source.

Sketch a or some future scenario (s) (20-50 years up front) regarding the technology with the help of storytelling. Start with at least one dystopian scenario.

In 20 years there might not be a dominant warehousing structure that can use standard solutions which would make identifying and sorting pallets not very useful if everyone has a different type or standard. The power of the current solution being in widespread standardization.

Would you like to live in one of this scenario's? Why? Why not?

The first scenario means we have less surprises in management of warehouse-like structures.

What happens if the technology (which you have thought of as ethically well-considered) is bought or taken over by another party?

It could be repackaged into a bigger application that offers more features, could be priced higher or change the data policies we set in place, however given we don't deal in personal data, the risks should be minimal at best.

Impact Improvement: Now that you have thought hard about the future impact of the technology, what improvements would you like to make? List them below.

Make sure that no data that might be useless at the moment of launch but potentially harmful in the wrong hands gets stored long term.