[music]

We're all seeing artificial
intelligence really augment automation,

things like robotics, how they approach
picking up an item in a box,

or how they approach
capturing the information

on a box to feed that back
into an execution systems.

It's no way to hide

from the fact that AI
and machine learning are becoming

the norm
for a lot of different technologies

in the sector of logistics.

[music]

Many of you may have heard of AI.

For those of you that haven't,

you've probably interacted with
AI without actually realizing it.

One sec.

Oh, it's Starbucks,

reminding me to order
my coffee because I usually order

my favorite venti vanilla
latte right around this time.

Has that ever happened
to you when you're searching on a website,

and then the next thing you know

you're getting personalized
messages from them,

urging you to take the next action?

Well, that's what AI does.

It analyzes consumer
behavior and helps predict

when an individual
is going to make their next purchase.

This amazing potential
of AI is being harnessed

by supply chains to not only predict
but influence customer behavior,

and also automate processes,

make well-informed decisions,
and boost productivity.

In this episode of Jobs of Tomorrow,

we're exploring
how artificial intelligence

helps supply chains work better.

How can companies leverage
these technologies to achieve time,

resource, and cost efficiency?

What does it mean for existing
and new job opportunities in the industry?

Supply chains are a lot like electricity,
you rely on them every day,

but you only really think about
them when they're not working.

To stay off your mind,
supply chains need to be agile,

to adapt to disruption.

AI and machine learning have proven

to be innovative solutions
to these challenges,

and have the potential to transform

supply chains for greater
efficiency and resiliency.

From cost savings,
reduced operational redundancies,

and risk mitigation
to better supply chain forecasting,

quicker deliveries,
and improved customer service,

AI technologies in the supply
chain offer great business benefits.

I think from our perspective,
where we see the magic coming together is,

first of all,
we have a very good way of capturing data.

We have a technology
or a very good process put in place

to really understand at all times
where everything is in the warehouse,

how the gaps are evolving,
where the goods are moving,

but then also connecting
that back to additional data points

that might not be from the warehouse
itself,

so across the supply chain.

I think the whole idea
behind end-to-end visibility

of the supply chain
and then using that for efficiency

and identifying bottlenecks

is the future and it's already live
for quite a lot of the big players,

it's only going to expand
now through the ranks.

Where we're seeing it all really working

together is when you have the data
loop closed.

Oana Jinga is a co-founder
and CCO of Dexory,

a service robotics and AI company.

With a background in leading
strategic partnerships at Google,

and developing innovative
products at Telefonica,

she's passionate about developing

and bringing autonomous mobile robots,
or AMRs,

to the logistics industry
to drive significant value

across all warehouse processes.

You can actually connect what's coming,
for example,

in a shipping container to what's getting
on a truck to the warehouse,

what's happening inside the warehouse,

and then what's being
delivered to the end customer.

At the moment, the warehouse
is a little bit of a black hole,

like you know potentially
what's coming in going out,

where things are inside,
what's been broken, what's been moved

is very, very hard to keep track
of because it's just so manual still.

The moment you can unlock that and connect
it to the other data points,

closing that data loop,

I think it's going to be a very big
eureka for a lot of industry players.

A lot of tasks across the supply chain,

such as picking and packing items,
sorting and moving goods,

or loading and unloading trucks

are still performed
by humans in many companies.

All of these tasks

and many more can be easily
digitized using

AI to achieve greater
efficiency and speed.

Since robots don't need to take
intermittent breaks, like humans,

this frees up the humans to do higher
value and more rewarding work.

There's a level of intelligence
in there to understand where to go,

what not to touch, how to avoid obstacles,
and everything else.

That's at the level
of the machinery itself.

Kristi Montgomery,
who's Vice President of Innovation,

Research, and Development at Kenco Group,
shares the same opinion as Oana.

We're also seeing artificial
intelligence really augment automation,

things like robotics and how they approach

picking up an item in a box
or how they approach

capturing the information on a box to feed

that back into an execution system.

You're seeing that ability
for the machine to learn

that when this box
is crumpled on this corner,

this is damaged,
I need to notify somebody.

Just taking some of the more subjective
decision-making

that a human can make out of the decision

and then allowing the AI
to really augment that capability

so that we have a lot more real time
information,

a lot more accurate information,

I think is how we're seeing
it used all over the warehouse.

Many companies today
lack actionable insights

to make timely decisions

that are successful with
speed and agility.

Cognitive automation, powered by AI,

has the ability to sift
through huge amounts

of data to detect patterns that contribute

to intelligent decision-making much

better than what's possible
with traditional systems.

I think where the beauty
comes in is on the data capturing

and the data interpretation.

We use computer vision cameras,

we take millions of pictures
of the racks all in one go,

and then we use machine learning

behind the scenes
to then collate them together,

identify barcodes, QR codes,
box sizes and shapes, train our models

to then obviously identify them
and measure them and scan them.

Then once that's been done,

so the data has been captured
and interpreted,

then transforming that into insight
is where the AI comes into place.

A warehouse or distribution
center is like a logistics village,

controlled by people, processes,
equipment, and technology.

Its role is to move materials and products

in and out and to store

them effectively in between.

It's comprised of a multitude of functions

and operations
that all have to stay in sync.

Technology is a tool to track
everything in this village.

Technology can also connect
all the villages

in a supply chain ecosystem,

and the transportation
in between to give you

a clearer picture of what is happening

and where the product
is within that entire system in real time.

Once supply chains can do this,

they actually start
predicting the flow of goods

to and from each facility

and streamline complicated elements,

such as demand forecasting
and simulation to improve

the chain's overall resiliency
when disruption hits.

That's pretty powerful,
but AI can do so much more.

When hooked into monitoring equipment,
it can also improve worker safety.

AI with camera vision is now recognizing

when there's a potential hazard

within the warehouse
and notifying somebody to say,

"Hey, this stock is leaning
and could potentially hurt somebody."

Integrating it into our daily lives
within the supply chain industry

is becoming more and more of the trend.

Coming up.

There's a lot of opportunity
for interpreting the digital pixel space,

there's inventory we can see,

there's machineries we can see
and interpret it with the help of AI.

[music]

So far, we've wrapped our heads
around how different branches of AI,

such as computer vision
and machine learning are enabling

businesses to automate
processes across supply chains.

Robots are capable of doing
most of the heavy lifting and streamlining

operations and making things
easier for human workers.

The development and deployment

of artificial intelligence
technologies is accelerating,

but the presence
of discriminatory or unfair biases

in many AI solutions remains a concern.

I think that there's a lot of focus

around unbiased AI
and what does that mean,

and especially with like chat
coming out and so on,

things are evolving at a crazy speed.

AI bias refers to the tendency
of algorithms to reflect human biases.

It can creep into algorithms
because of different reasons,

such as insufficient training data,

lack of diversity among AI professionals,
or biased historical data.

Consider that a company
wants to hire warehouse workers.

It uses an AI-based hiring tool
to review job applicants' resumes,

later realizing that the software
has a strong bias for hiring males.

That's because its computer models

are trained to vet
applications by observing

patterns and resumes submitted
to the company over a 10 year period,

and most came from men.

It might make sense.

Until some years back, most warehouse
tasks were about heavy lifting,

but today,
when a lot of tasks are being automated,

warehouses are seeing
a lot of female workers.

One of the things companies
can do about AI biases

is testing algorithms
in a real life setting.

What's even more important,

and probably the foundation
of building an unbiased AI,

is changing the way people
are educated about science and technology.

There needs
to be more multidisciplinary collaboration

instead of focusing
on mere objective viewpoints.

From my perspective as a woman in tech

and an advocate for technology
as well, I would really like us

to have a proper consideration
of what does it mean

for different types of people
and different types of groups.

That should start
by having a very inclusive

and diverse environment
that works in actually building

the technology that has any AI
or any more futuristic thinking robotics.

From that perspective, yes,
it's something that I'm working on a lot,

trying to bring
more women into the sector,

but then also collaborating
with different associations

to share our opinions
and share what we're doing

as well, opening that up
for scrutiny and debate.

It's a continuous collaboration, I think,

through the community
to make sure that we achieve that,

but that should start with the diversity,

which is why I'm a massive advocate
to make sure that comes in.

As much as Oana is passionate
about eliminating biases in AI,

she's determined to design, develop,

and bring AI solutions to the supply chain

industry to drive value across the chain.

Their AI-driven solution,

underpinned by autonomous
robots and data visualization,

provides real time data and insights
and empowers businesses to measure,

track, and locate goods
across every logistics step,

from inbound to storage,

picking to outbound,

with zero human intervention and downtime.

It also means saving
a lot of legwork and time.

Another company leading
the game in AI adoption is sSy.ai,

which won the Startup Award at ProMat.

sSy.ai was cofounded by Thomas Zoehrer,
whose innovative idea focused

on transforming cameras
into cost-efficient yet powerful tools

for indoor object tracking of operators,
machines,

and more to streamline
supply chain operations.

Fascinating from my point of view

is that the standard cameras
nowadays with 4K,

one single frame has 8.6 million pixels.

That's a very rich data set, if you wish.

On top of that,
you have around 60 frames per second.

You can imagine
that there's a lot of opportunity

for interpreting the digital pixel space.

We are starting with labor tracking,
but also forklift trucks,

any other assets in the warehouse.

This is not the end.

There's inventory we can see,

there's machineries we can see
and interpret with the help of AI.

Our starting point, though,
is labor and workforce,

and we want to use this in a positive way

for engagement and working and leveraging

also our workforce as what I call

our backbone
to make operations successful.

Now, that's an interesting and unique
concept.

No wonder the company has been recognized
for an innovative solution.

Working along similar lines is Honeywell,

a technology giant widely
known for pioneering automation

to streamline complex
industrial facilities.

This year, we're really looking
at the two strategies that our robotics

and automation teams
are really focusing on.

One is in articulated robotics,

the other is in our mobility
robotic space.

Articulated pick and place mobility

is how we're using AMRs

and some of the robotic
systems to move product

from point A to point B
or within an integrated solution.

You will see our Smart
Flexible Depalletizer.

This is a system that depalletizes single

and mixed skew products autonomously.

It utilizes computer vision,

it utilizes artificial intelligence
and machine learning,

and a lot of differentiated features

to be able to do that consistently

within the dynamics
of our customer environments.

The mobility robotics
is we have partnered with ClearPath Auto.

We have an AMR forklift
solution which is autonomous

that will bring the pallets of product

into the Smart Flexible
Depalletizer cell and show

that end-to-end solution
to be able to receive product

at the dock door,
take it to a depalletizer

manual station with the AMR forklift

and show the productivity to induct
product as it goes into the system.

That's Dr. Thomas Evans.

He's the robotics chief
technology officer at Honeywell.

With years of experience in automation,

he recognizes that AI has immense
potential to automate supply chains,

enabling greater
transparency and efficiency.

Today, when most supply chains
are stressed by labor shortages

and the growing customer demand

for speedy and accurate order fulfillment,

AMRs designed by Honeywell and ClearPath
Auto can be deployed to existing

supply chains in order to quickly
adapt to changing customer demand.

Coming up.

We could be in a state
where there is truly

some what I'll call
cognitive decision-making.

The machine is taking a look
at what's about to happen,

not only prescribing
some potential actions

but actually taking
those actions within the systems.

[music]

Earlier, we looked at how industry
leaders are embracing AI technologies

to optimize supply chains
in order for greater cost,

time, and resource efficiency.

It wouldn't be wrong to say
that this is just the beginning.

As more business use cases
transform into success stories,

AI will gain mainstream adoption.

The greater the adoption,

the greater the opportunity

for innovation down the line.

AI and machine learning are becoming

the norm

for a lot of different technologies

in the sector of logistics.

From the supply chain side of things,

transportation-wise,

understanding where goods are,

how they're evolving in the trucks,

but then also as they move

into the warehouse,

it's happening to them.

It's going to become the norm

for a lot of the day-to-day tools

that I think the industry is going to use.

While AI is poised to offer greater

visibility across supply chains,

it is also anticipated to accelerate
the growth of digital twins.

A digital twin is a digital replica
of a physical supply chain.

It helps organizations recreate

their real supply chain in a virtual world
so they can test scenarios,

model different nodes, modes, flows,

and policies and understand how decisions

and disruptions will impact
network operations.

Digital twins also allow
firms to simulate changes

that they want to make in a facility
and measure how those changes

will impact operations
and top-line and bottom-line growth.

There's no doubt
there will be digital twins,

as for now,
which might be the ultimate goal

of data, of data harvesting,

of data interpretation to create
digital duplicates of the real world

and an experiment
or simulate in this digital world

to be applied in the real world.

That's from my point of view,

certainly the ultimate goal of data
harvesting, data interpretation.

Then in between, you might see,
or you will see things like IOT

or Industry 4.0 and such kind of things.

I think ultimately
this will be digital twins.

That's interesting.

Think of a digital warehouse
where you have robots

to pack the products instead of humans.

You'll be better positioned to measure

the pros and cons in terms of time, cost,

and efficiency,
and decide if it's worthwhile

to implement robots in real life or not.

Instead of making a decision
based on assumptions,

you can make more solidified
decisions based on hard data.

We could be in a state
where there is truly some--

what I'll call, cognitive decision making.

The machine is taking a look
at what's about to happen,

not only prescribing
some potential actions,

but actually taking
those actions within the systems,

in the execution systems.

I think that will be a powerful state.

It'll take some time to get
there because there's a lot of human

decisions that are made just based on,
I'll call it gut feeling, right?

How do you teach the machine gut feeling?

I think we'll get there.

The decision to integrate
AI into existing systems

will be greatly influenced
by the value it can bring

to business in terms of cost,
time, and efficiency.

For example, if you have a robot

that cannot only do picking
but can do packing

and can move products from point

A to point B and potentially load a truck,
that's pretty powerful.

It's important to consider
that robots feed on data.

They're designed to work
exactly as programmed,

any uncertainty poses challenges.

Having said that, the evolving
technology will chart a path for robots

to become more intelligent
and more adaptive.

Humans can adapt
a lot quicker than the robots can,

and so there's a stoppage point

where the robot is doing, let's say,

offloading of a container
or something like that.

It just can't deal with this box,
it's the wrong size.

It's not what I'm expecting
to see and so it stops,

and so people are concerned about
how do I deal with,

do I have to have someone
that's always babysitting the robots?

I think there's just some challenges.

We're working
through technologies getting there.

We're not quite there yet,

but I think that will change
rapidly in the next three years.

As supply chains are embracing
innovative technologies

to redefine business operations,

the jobs and responsibilities
are also evolving.

You don't need to hold a specific degree

to tap into the industry to start working

with robots or managing
a fleet of vehicles

dispatching goods from a warehouse.

There's some even kind of new types
of roles and jobs

that have been put together to work
amongst the robotics technology.

Somebody overseeing the robot fleets,

ensuring that everything
is going according to plan,

and also because automation has brought

in potentially more and more goods

into a site, for example,

that from experience so far

and then all the research
you're seeing has led

to actually more workers
trying to be brought in

to make those final decisions
in what the customer is getting

and how to deal with
the customer at the end.

I think the skill set is changing.

It's a lot more interesting
actually to be in the space.

There's a lot more opportunities to grow

and to expand horizontally
and also vertically.

Diversity in supply chains is not only
limited to roles and processes,

it extends to people as well.

What was once a male-dominated industry

is becoming more diverse and inclusive.

What excites me
is that I'm seeing more women join

the technology space
within the supply chain industry,

as well as engineering space

within this industry
and so we're seeing a push,

but most companies, I would say,

now have a focused initiative
around DE&I as Kenco does,

and really trying to bring more variety
and diversity into our workforce.

The supply chain industry
is full of opportunities to learn,

implement, and grow.

Whether you're intrigued by AI
or fascinated by robotics engineering,

or maybe you prefer warehouse
management operations,

there's really something for everyone
and the moment you land a job here,

you can be sure
you're on your growth trajectory.

Thanks for watching.

I'm your host, Kristin Marand,

and we'll see you on the next episode
as we explore the jobs of tomorrow.

[music]