



Peer Robotics

# Role of Human-Robot Interaction

*Path to enable automation across  
Small to medium scale  
manufacturing*





# Building resilience: the reshoring of manufacturing for robust supply chains

Manufacturing is moving back locally



Government initiatives



Eagerness to make internally



Proximity to customers & markets enabling a lean supply chain

# SMEs are the backbone of American manufacturing



Manufacturing industry's contribution to American GDP

**11% | \$2.3T**

McKinsey & Company, 2022



People employed in manufacturing

**16 million**

IbisWorld, 2022



% of SMEs in manufacturing

**98.6%**

SCORE Association, 2022A

# Labor shortages



Expected shortage of workers by 2030

**20 million**

Forbes Contributor, 2022



Unfulfilled jobs in durable goods manufacturing

**50%**

(As of Nov 2022)

US Chamber of Commerce, 2022



Companies fall behind in scheduled production because of labor shortages

**7 in every 10**

Forbes Contributor, 2022



“The use of robotics and automation in manufacturing is no longer a luxury, it's a **necessity**.”

– Andrew Ng, AI researcher and entrepreneur  
Co-founder of Google Brain, Founder of Coursera



# But traditional automation has hidden costs that could lead to small manufacturers sinking

## Traditional robots

Surface costs: what you see is just the tip of the iceberg

### Hidden Costs

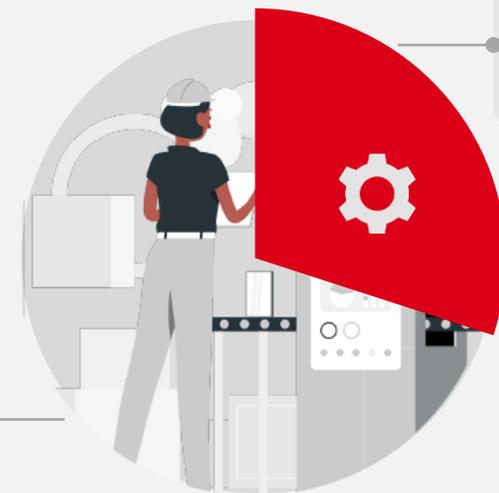
- + Solution Accessories
- 🕒 Time-consuming
- 🧩 Complex
- 💰 High integration costs
- 🔒 Inflexible
- ⚠️ Unsafe – must install fences, safety scanners
- 🏭 Made for the large manufacturer

# Cost and complexity are the biggest barriers to automation



3-6 months

Long deployment times for even the simplest of tasks



Integration & Deployment  
70%

Robotics hardware  
30%

Programming cost can be upwards of 2-3x hardware cost



# Enter Human-Robot team: technology that helps SMEs win in a volatile world

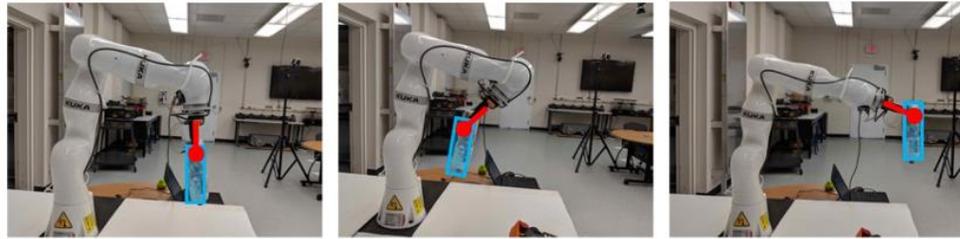
Our mission is to **democratize automation** for small and medium-sized enterprises with pioneering technology that overcomes traditional automation barriers, thereby **unlocking the potential of SMEs** to achieve the previously unimagined.



# From Touchless Visual Interaction



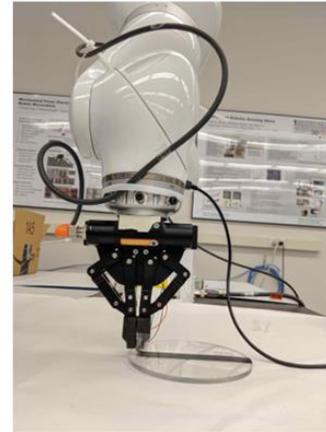
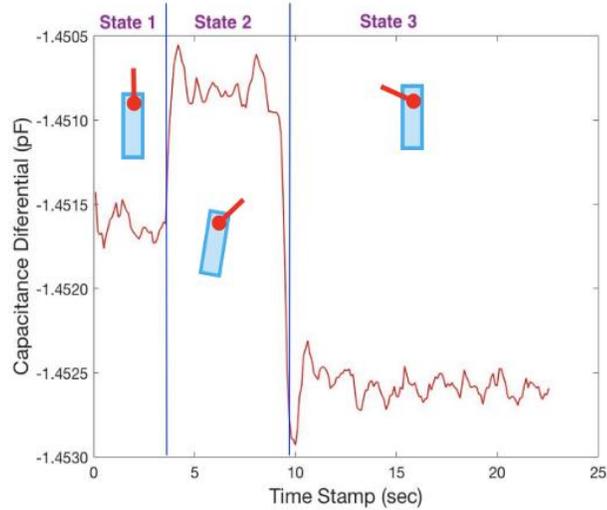
# To Tactile Interaction with manipulators



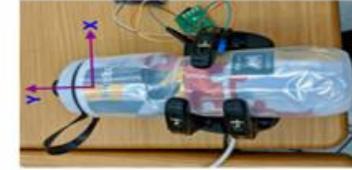
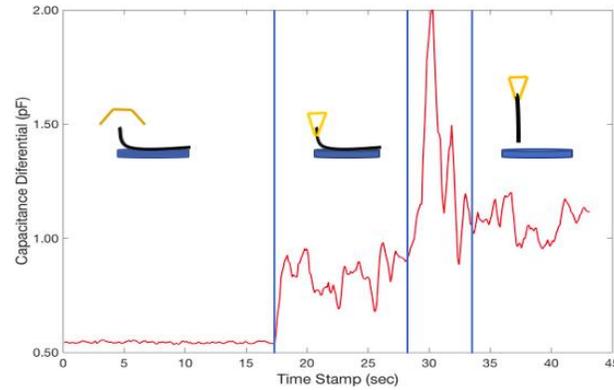
(a) State 1

(b) State 2

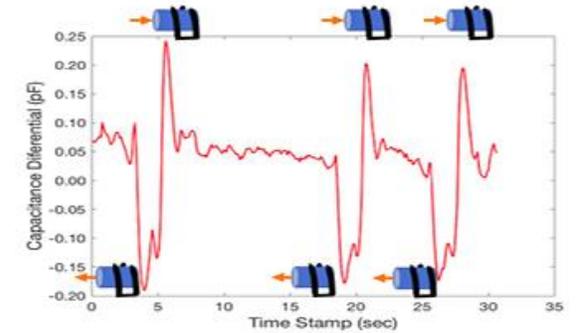
(c) State 3



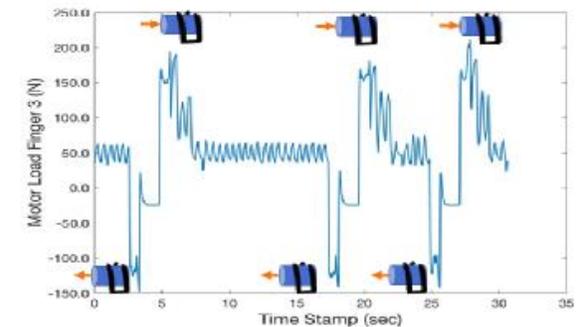
(a) Experimental setup for removing tape from an acrylic block



(a) Experimental setup using the Right-Hand Reflex Tactile hand with the shear sensor on the isolated finger

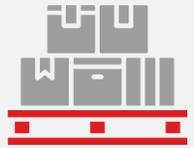


(b) Sensor response over the course of interaction with the object





# Peer's next-gen AMR is about automation within reach.



Payload of 550 lbs



Obstacle avoidance



Collaborative technology – works safely with humans



Plug & Play



Natural navigation



Person2Peer Teaching\*



\*Patent-pending technology

# Evolution of internal logistics



## Trolley

- Manual
- Ergonomic risks
- Inefficient
- Time-consuming

## AGVs

- Guided movement using tapes/markers
- Fixed, pre-planned inflexible routes,
- Significant infrastructure changes
- High maintenance and reprogramming cost

## AMRs

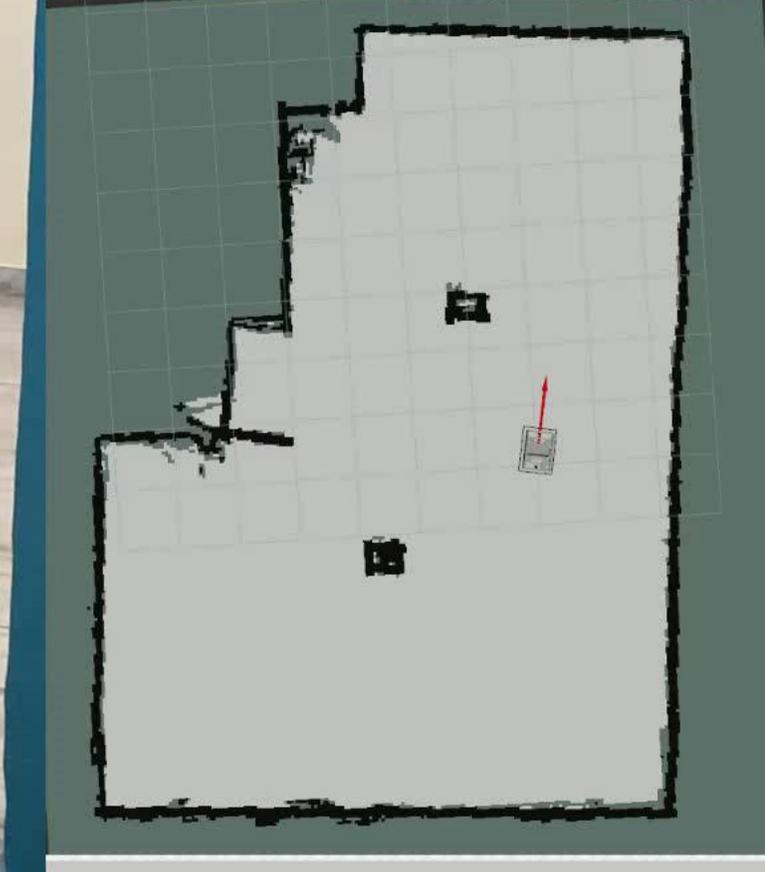
- Autonomously navigates & moves
- Less infrastructure changes than AGVs
- High deployment and programming cost

## Collaborative Mobile Robots

- Autonomous movement with learning-from-humans tech
- No infrastructure change required
- Ease of deployment and programming for even the frontline team

# Feature Video





# Person2Peer Teaching

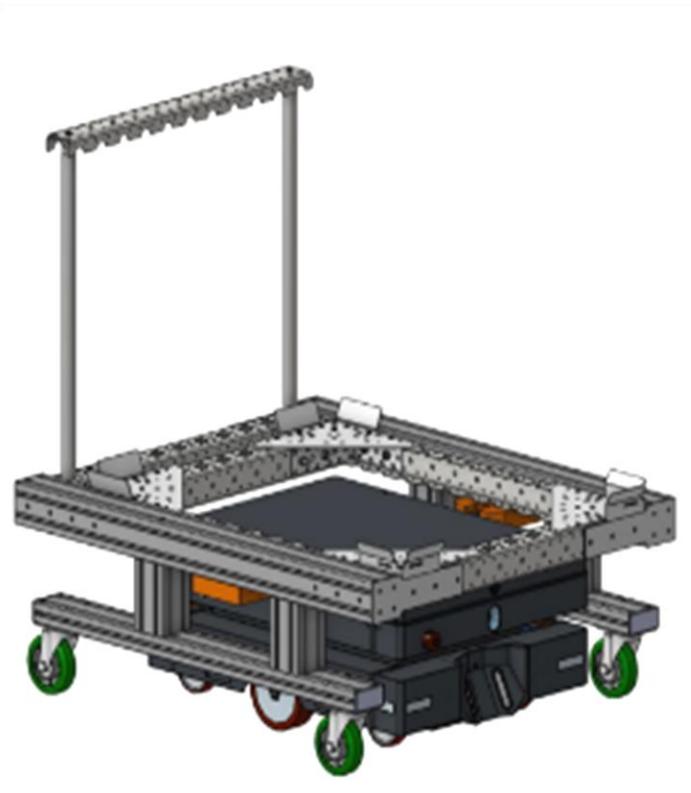




# Trolley Movement Solution

## Use Case

- Movement of trolleys within the shop floor



## Solution

- Pick-up and drop zones defines by users
- Robot can tunnel the trolley and autonomously deliver on demand

## Impact

- Reduction in dedicated labor for material movement.
- Complete visibility of WIP material
- Reduced fatigue of operators





# Bin Movement Solution

## Use Case

- Assembly kit supply from warehouse to assembly line

## Solution

- Kits prepared in the warehouse by humans with robots
- Delivered by the robots across the shop floor

## Impact

- Reduction in dedicated labor for material movement.
- Complete visibility of WIP material
- Pull type material flow implementation





# Tech-driven talent: attracting & retaining labor with robotics

Skilled labor is the #1 barrier to successful reshoring – but also the #1 enabler



Robots can help attract tomorrow's workforce today: **36.6% of Gen-Z** respondents are interested in careers related to STEM



Using collaborative robots sends a positive message to employees about being upskilled rather than replaced



Robots will handle tasks that are Dull, Dirty, Dangerous, and Difficult – making talent appreciative of employers who create value-added work environments



**Creating a world where robots  
handle the ordinary so humans  
can do the extraordinary.**



**Peer Robotics**

Thank you!