

# AI and Safety – Safe Robot-Human Interaction Meeting Kit



## WHAT'S AT STAKE

As robots and AI-powered systems become more common in manufacturing, logistics, healthcare, and everyday workplaces, the risks of unsafe human-machine interaction grow. Robots can move suddenly, apply tremendous force, or misread human behavior if sensors fail or programming is incomplete. A single unexpected motion can result in serious injuries. Working around AI-driven machines requires full attention, clear communication, and respect for designated safety zones, because even a momentary lapse around a machine that doesn't slow down or get distracted can have life-changing consequences.

## WHAT'S THE DANGER

Robots don't get tired, distracted, or emotional – but humans do. And when people work near machines that move fast, apply high force, or make automated decisions, even a small mistake or a moment of misalignment can turn into a serious injury. The danger comes from how quickly these systems react, how strong they are, and how limited their ability is to sense unpredictable human behavior.

### Unexpected or Sudden Movements

Robots can accelerate, rotate, or extend an arm without warning. If a worker is too close, even a small movement can strike, crush, or trap them against equipment.

### Sensor or Detection Failures

AI systems rely on cameras, laser sensors, pressure mats, and proximity detection – all of which can fail or misinterpret human presence.

- Dust, lighting, noise, or reflective surfaces can interfere with sensors.
- A robot may “think” an area is clear even when a person is present.
- Software glitches can delay or block stop commands.

### Human Errors and Risky Behavior

Many incidents happen not because of the robot – but because workers underestimate the danger. Entering a robot cell without lockout, bypassing safety guards, or assuming the robot “sees” them puts workers directly in harm's way.

## **Unpredictable AI Decisions**

AI-driven machines may adjust speed, path, or action based on real-time data. When humans don't anticipate these changes, it increases the chance of collisions or near misses.

## **HOW TO PROTECT YOURSELF**

Staying safe around robots and AI-driven systems starts with understanding how they behave, how they detect people, and what their limitations are. Robots follow programming – not instinct – so your safety depends on keeping predictable, controlled, and cautious movements around them. Treat every robot as if it could activate at any moment.

### **Respect Safety Barriers and Lockout Procedures**

Physical guards, fences, interlocks, and lockout/tagout exist for one reason: to keep humans out of harm's way.

- Never enter a robot cell without proper authorization.
- Always lock out powered equipment before maintenance or troubleshooting.

### **Stay Visible and Predictable**

Robots rely on sensors, and sensors don't interpret hesitation or sudden movement the way humans do.

- Avoid quick changes in direction.
- Stay within designated walkways.
- Make your movements deliberate and predictable.

### **Avoid Assumptions About AI**

Robots may appear "smart," but they cannot fully understand human behavior. Do not assume the robot:

- Sees you,
- Will stop for you, or
- Will slow down if you get close.

### **Report Malfunctions or Abnormal Behavior Immediately**

If you notice unusual movements, sensor errors, delayed responses, or repeated stops, treat it as a serious risk and report it before continuing work.

## **FINAL WORD**

Robots and AI systems can make work faster, safer, and more efficient – but only when people understand how to work around them. These machines don't make judgment calls, and they don't react to danger the way humans do.

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