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COURSE BROCHURE

# AI Human-Robot Interaction and Cobot Project Training Course

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Registered in the United Kingdom and Saudi Arabia

# AI Human-Robot Interaction and Cobot Project Training Course

AI Human-Robot Interaction and Cobot Project is a 1-week training course for engineers and innovation managers working with collaborative robots who will build a Cobot Interaction Pilot Charter. Cobots share benches and wards with people, who expect them to see, listen and adapt. Jupiter Prime Training presents AI Human-Robot Interaction and Cobot Project as the discipline of designing robots that people can instruct, trust and work beside safely.

## Why AI Human-Robot Interaction and Cobot Project Matters Now

Cheaper vision sensors, speech models and lightweight robot arms are moving automation into small cells and service settings. A site that designs interaction well raises throughput and acceptance; one that bolts AI onto a robot without hazard analysis risks injuries, stoppages and rejection by staff. The course draws on the ISO/IEC 42001 AI management system standard and the NIST AI Risk Management Framework AI RMF for oversight of learning robots.

## Who Gains Most from AI Human-Robot Interaction and Cobot Project

- Engineers who specify, integrate and commission collaborative robot cells
- Innovation leads who select automation use cases and sponsor robot trials
- Safety specialists who assess shared workspaces and approve speed and separation limits
- Controls and software staff who connect perception, speech and robot controllers
- Operations supervisors whose crews will teach, monitor and work beside the robots

Manufacturers and service operators gain most when engineering, safety and shop-floor supervisors attend together.

## AI Human-Robot Interaction and Cobot Project Capabilities

Participants move from fixed robot paths to cells where sensing, dialogue and shared tasks fit the people in them.

- Specify interaction requirements from task analysis and operator interviews — cell sponsors
- Design perception pipelines that track people, hands and objects in a shared workspace — integration engineers
- Build speech and gesture command sets with clear confirmation and fallback — operators
- Assess collaborative hazards and set speed, separation and force limits — safety approvers
- Apply learning from demonstration so staff can teach new tasks without code — production supervisors
- Test acceptance, cycle time and near-miss signals during a cobot trial — investment committees

## Key AI Human-Robot Interaction and Cobot Project Terms

- Collaborative robot cobot — a robot designed to operate near or with people under defined safety limits.
- Human-robot interaction HRI — the study and design of how people and robots communicate and share tasks.
- Speed and separation monitoring — a safety method that slows or stops a robot as a person comes closer.
- Learning from demonstration — teaching a robot a task by physically guiding the arm.
- Pose estimation — computer vision that locates a person's joints and posture from camera images in real time.
- Shared autonomy — an arrangement where the robot and the person each control parts of a task and hand over smoothly.

## AI Human-Robot Interaction and Cobot Project Day by Day

## Day 1: Cobots, People and Shared Workspaces

- Cobot Collaboration Modes From Coexistence To Hand-Guiding — Choosing Interaction Level
- Task Analysis Of Manual Stations — Selecting Steps For Robot Support
- Operator Interviews And Ergonomic Strain Mapping — Framing Interaction Requirements
- Service Robots In Hospitals And Warehouses — Comparing Sector Constraints
- Trust, Workload And Acceptance Factors — Predicting Staff Response

## Day 2: Robot Perception of People

- Depth Cameras, Lidar And Safety Scanners — Sensor Selection For Cells
- Pose Estimation And Hand Tracking Models — Detecting Reach And Intent
- Object Recognition For Part Handover — Reliable Grasp And Release
- Intention Prediction From Motion Cues — Anticipating Operator Next Moves
- Perception Failure Modes In Glare And Clutter — Setting Fallback Behaviour

## Day 3: Speech, Gesture and Shared Control

- Speech Command Grammars And Language Models — Hands-Free Robot Instruction
- Gesture Vocabularies And Recognition Accuracy — Designing Unambiguous Signals
- Light, Sound And Screen Feedback Cues — Making Robot Intent Visible
- Shared Autonomy And Handover Protocols — Dividing Control Between Person And Robot
- Learning From Demonstration And Kinesthetic Teaching — Retasking Without Programming

## Day 4: Safety, Oversight and Trial Design

- Collaborative Hazard Analysis And Risk Reduction — Approving Shared Workspaces
- Speed And Separation Monitoring With Power And Force Limits — Safe Contact Thresholds
- ISO/IEC 42001 And NIST AI RMF Controls — Oversight Of Learning Robots
- Simulation And Digital Twin Testing Of Cells — Validating Before Floor Trials
- Trial Metrics For Cycle Time, Near Misses And Acceptance — Go Or Stop Decisions

## Day 5: Practising the Cobot Interaction Pilot Charter

- Applying Task Analysis To An Assembly Station Case — Interaction Requirements
- Applying Gesture And Speech Design To A Hospital Logistics Robot — Command Set
- Applying Hazard Analysis To A Palletising Cell — Safety Limits Register
- Peer Challenge Of Trial Metrics And Rollback Rules — Sponsor Readiness
- Cobot Interaction Pilot Charter — Requirements, Interfaces, Safety And Trial Plan

## Applying AI Human-Robot Interaction and Cobot Project After the Course

- Run a task analysis and operator interview round on one manual station and rank the steps a cobot should support.
- Draft a speech and gesture command set for an existing robot cell and test it with five operators for misrecognitions.

## AI Human-Robot Interaction and Cobot Project Questions FAQ

### What is AI human-robot interaction and cobot project work and why does it matter now?

It is designing how collaborative robots sense, understand and work with people, then trialling a cell. It matters now because cobots are leaving fenced cells for shared workspaces.

### Which roles gain most from AI human-robot interaction and cobot project skills?

Robot integration engineers, innovation leads, safety specialists, controls staff and supervisors of cobot crews gain most.

### How does AI human-robot interaction and cobot project training differ from an industrial robot programming course?

A programming course teaches paths and controller code for fenced robots. This subject designs perception, dialogue, shared control and safety around the people in the cell.

## What do you bring back from AI human-robot interaction and cobot project training?

You bring back a draft charter of requirements, command sets, safety limits and trial measures for one cobot cell.

## AI Human-Robot Interaction and Cobot Project: The Way Forward

The Cobot Interaction Pilot Charter sets out the interaction requirements, perception and command design, safety limits and trial measures for one collaborative cell. Its first use is deciding whether the trial goes ahead and at which station. Engineering, safety and operations leads share it. After the first trial, revisit whether operators trusted the robot's signals and where shared control needed redesign.