Table S1. Tasks description in developed collaborative scenarios.

Reference	Task description
(Afzal et al., 2023)	Collaboration in an Industry 5.0 task. First, participants engaged in a multitasking activity (SIMKAP) that required number comparison and simultaneous responses, with data collected in two states: rest (no task) and task execution (SIMKAP). Secondly, the robot dynamically adapted its behavior based on cognitive load classification. Under high cognitive load, it reduced task complexity or provided additional recovery time, while under low cognitive load, it increased task complexity or accelerated the work pace, ensuring a more adaptive and responsive interaction.
(Bettoni et al., 2020)	Collaboration in a manufacturing task, where the participant performs manual assembly injection-molded parts and conducting visual inspections. First, the participant is responsible for quality control, ensuring that parts meet required standards, detecting visual defects, and performing manual integrity tests. Secondly, the participant interacts with the cobot, approving or rejecting system-proposed reconfigurations, requesting task redistribution, and adjusting the cobot's behavior as needed, while also monitoring production time windows to prevent excessive cooling of plastic components.
(Caiazzo et al., 2023)	Collaboration in a manual assembly task, where the participant assembles an industrial prototype, connecting seven wires to a metal plate following visual instructions on a touchscreen. First, the participant retrieves, connects, and secures the wires, then places the assembled plate on a sliding conveyor to proceed to the next task. Secondly, in the collaborative scenario, the cobot assists by delivering and retrieving plates, while the participant approves or rejects system-proposed reconfigurations, allowing for adaptive task distribution.
(Capponi et al., 2024)	Collaboration in a manual assembly task, where the participant assembles three different products: a mechanical device, a tile cutter, and a diaphragm water pump. First, the participant retrieves components from a feeder tray, assembles them on a workbench, and follows specific assembly processes for each product, including positioning parts, fastening components, and conducting visual inspections to ensure correctness. Secondly, in the collaborative scenario, the cobot assists by delivering and moving components, allowing the participant to focus on assembly. Once completed, the participant returns the assembled product to the cobot, which places it on a conveyor or another work area. Additionally, the participant can approve or reject system-proposed reconfigurations, enabling dynamic task distribution.
(Chen et al., 2024)	Collaboration in an object transportation task, where the participant moves a whiteboard from one location to another, ensuring precision and stability throughout the process. First, the participant grasps, carries, and positions the object, coordinating movements with either another human (in human-human collaboration) or a robot (in human-robot collaboration). Secondly, in the human-robot collaboration scenario, the participant works alongside a robotic arm, which assists in transporting the object, reducing physical effort and cognitive load. This allows the participant to focus on decision-making and coordination, while the robot handles part of the workload, optimizing task efficiency.
(Gervasi, Capponi, Antonelli, et al., 2024)	Collaboration in a tile cutter assembly task, where the participant and the cobot work together to assemble a cutting mechanism by sequentially integrating components. First, the participant loosely secures the lateral supports to the base, while the cobot handles material movement, placing and retrieving components as needed. The participant then assembles the cutting mechanism by fastening the support, blade,

	and tile blocker, while the cobot removes the assembled cutting component from the workspace. Secondly, the participant connects the cutting mechanism to the base by inserting the rail rods and securing the lateral supports, while the cobot returns the base to the workspace for final adjustments. Lastly, the participant attaches the handle, and the cobot picks up the final assembled product, completing the task.
(Gervasi et al., 2023)	Collaboration in a tile cutter assembly task, where the participant and the cobot work together to assemble a cutting mechanism by sequentially integrating components. First, the participant secures the lateral supports to the base, while the cobot handles material movement, placing the base in the workspace, removing the assembled subcomponents, and retrieving the sliding support. The participant then assembles the cutting mechanism, fastening the support, blade, and tile blocker, while the cobot moves the completed cutting component out of the workspace. Secondly, the participant attaches the cutting mechanism to the base by inserting the rail rods and securing the lateral supports, while the cobot returns the base to the workspace for final adjustments. Finally, the participant installs the handle, and the cobot picks up the fully assembled tile cutter, completing the task.
(Gervasi, Capponi, Mastrogiacomo, et al., 2024a)	Collaboration in a tile cutter assembly task, where the participant and the cobot coordinate efforts to sequentially assemble the cutting mechanism and base components. First, the cobot delivers the base to the participant, who mounts the lateral supports for the rail rods. Once completed, the cobot removes the assembled base from the workspace. The cobot then holds the cutting mechanism in an ergonomic position, allowing the participant to assemble the blade and additional cutting components before the cobot releases the mechanism near the operator. Secondly, the cobot returns the base to the participant, who inserts and secures the rail rods to connect the cutting mechanism to the base. Finally, the participant installs the handle, and the cobot picks up the fully assembled tile cutter and places it aside, completing the task.
(Gervasi, Capponi, Mastrogiacomo, et al., 2024b)	Collaboration in a tile cutter assembly task, where the participant and the cobot work together to sequentially assemble the base, cutting mechanism, and final structure. First, the cobot positions the base, allowing the participant to attach the lateral supports. After assembly, the cobot removes the base and delivers the cutting mechanism components, enabling the participant to assemble the blade and support elements. The cobot then rotates and repositions the assembled mechanism. Secondly, the cobot places the base and cutting mechanism in the workspace, where the participant secures the rail rods and finalizes the structure. Finally, the participant attaches the handle, and the cobot picks up the completed tile cutter, completing the task.
(John et al., 2024)	Collaboration in an abrasive blasting simulation task, where the participant operates a robotic arm to control a virtual blasting nozzle. First, the participant moves the robotic arm to align a blue point (nozzle) with a target on a 65-inch screen, while performing a mental arithmetic task of varying difficulty to manipulate cognitive load. Secondly, in 33% of trials, the robot unexpectedly stops due to an invisible obstacle, turning the screen black to simulate unexpected robotic behavior, allowing researchers to analyze human cognitive responses to errors in physical collaboration.
(Kneževic et al., 2024)	Collaboration in a manual assembly task, where the participant and the robot work together to assemble electronic devices, such as fiscal modules or GPS units, in an industrial-like setting. The participant selects components, uses tools (screwdrivers, soldering irons), and performs assembly operations, following visual instructions from the visual interface. Hand gestures are used to signal task progress, such as an open hand to proceed or a fist to return to a previous step. The cobot assists as a

	physical support, delivering necessary components for each assembly step and positioning them ergonomically.
(Korivand et al., 2024)	Collaboration in a quality control task, where the participant and the robot work together to ensure precise measurements of manufactured parts in a collaborative manufacturing environment. The participant uses a caliper to take precise measurements across eight dimensions on three different parts, recording the values to maintain accuracy and consistency in quality control. The collaborative robot delivers the necessary parts to the measurement station, adjusting its speed.
(Lin & Lukodono, 2022)	Collaboration in an assembly task, where the participant and a robot work together to assemble a fan component onto the mainboard of a graphics processing unit (GPU). First, the robot holds and positions the fan component, ensuring proper alignment while the participant retrieves the mainboard, places it onto the fan, and secures it with six screws using an automatic screwdriver. The participant has control over the screw-tightening sequence. The robot maintains the object at a stable height (120 cm) and a 45° angle, moving at a moderate speed optimized for user comfort. Each assembly cycle lasts 60 seconds, and participants repeat the task for two hours, simulating real-world assembly conditions. Upon completion, the robot transfers the assembled GPU to a conveyor belt, finalizing the task.
(Liu, Habibnezhad, & Jebelli, 2021)	Collaboration in a masonry task, where the participant and a mobile robot work together to build a concrete block wall while assessing cognitive load. The participant memorizes an N-digit number, with N varying to induce different cognitive load levels (low, medium, or high). Afterward, they pick up a concrete block and place it on the wall under construction, followed by entering the memorized number into a portable device. The robot transports concrete blocks from a loading area to the assembly zone, ensuring a continuous supply for the participant to complete the wall construction efficiently.
(Liu, Habibnezhad, Jebelli, et al., 2021)	Collaboration in a bricklaying task, where participants first completed 30 rounds of bricklaying—15 rounds under low cognitive load (memorizing a 1-digit number) and 15 under high cognitive load (memorizing an 8-digit number). After placing each brick, they entered the memorized number into a laptop. Secondly, participants collaborated with a mobile robot responsible for transporting bricks to them, which adjusted its speed based on the participant's cognitive load and proximity, as determined by the Cyber-Physical System (CPS).
(Liu & Jebelli, 2022)	Collaboration in a construction task, where participants first performed a Digit Span Task to simulate different cognitive load levels—memorizing 3-digit numbers for low cognitive load and 8-digit numbers for high cognitive load. Secondly, participants collaborated with a mobile robot responsible for delivering materials in a simulated construction environment. The robot transported materials to the participants while dynamically adjusting its speed and trajectory based on the participant's cognitive load and proximity, as determined by the Co-Path motion planning system. Under high cognitive load conditions, the robot moved slower and maintained a greater distance.
(Liu et al., n.d.)	Collaboration in a bricklaying task, where participants first performed 20 rounds of bricklaying under two cognitive load conditions—high load (memorizing 8-digit numbers) and low load (memorizing 1-digit numbers). The robot operated at a fixed pace (one block every 15 seconds) without adapting to cognitive load in this phase. Secondly, participants performed 10 additional rounds of bricklaying, where the robot dynamically adjusted its speed based on the participant's cognitive load, as determined by the physiological computing system.
(Packy et al., 2024)	Collaboration in a puzzle-solving task, where the participant and a robot work together to solve a RushHour-based puzzle on a 7x7 grid by strategically moving

	blocks. The participant plans and executes moves, shifting blue blocks to clear a path for the red block, following movement constraints that prevent collisions or overriding other blocks. The goal is to complete the puzzle with minimal moves and spaces traversed. The robot assists in moving blocks, with its behavior varying based on team conditions: adaptive (correct moves), neutral (observation only), or maladaptive (incorrect moves), influencing the efficiency of the collaboration.
(Pluchino et al., 2023)	Collaboration in an industrial assembly task. First, the participant selected a green metallic plate based on instructions displayed on a monitor. They then manually secured six pillars and six screws onto the plate to ensure firm fixation. Afterward, the assembled green plate was positioned in a designated area on the workbench, marked by plexiglass pieces. The participant then selected a transparent plate and placed it on supports in the cobot's area. Secondly, the participant assembled a puzzle using a black plastic plate and colored pieces following a predefined pattern. After the cobot simulated the gluing process on the transparent plate, the participant retrieved it and placed it onto the semi-assembled block. Finally, they selected a red metallic plate and used an electric screwdriver to tighten screws in a specified sequence, as instructed by the monitor.
(Roesler et al., 2024)	Collaboration in an industrial assembly task. First, the participant mounted components on LEGO-based circuit boards, which were delivered by the cobot to a designated transfer area. Additionally, participants perform a secondary task on a tablet (A blue rectangle appeared randomly every 10 to 30 seconds, requiring participants to tap it within three seconds.), designed to simulate multitasking requirements and serve as an indicator of mental workload.
(Savković et al., 2022)	Collaboration in an industrial assembly task, where participants and a collaborative robot (cobot) worked together in four distinct scenarios: Standard work, Ergonomic work, Guided work, and Collaborative work with a collaborative robot assisting in repetitive tasks. Participants followed a structured sequence to assemble the prototype, which included positioning a steel base, securing supports, attaching an acrylic cover, connecting electrical wiring, and fastening a hinge. Instructions were displayed on a touchscreen to guide the process. Moreover, participants completed final adjustments, such as securing a plastic roller and threaded rod to fix the acrylic cover to the base plate.
(Segura et al., 2025)	Collaboration in a quality inspection task, where participants worked alongside a collaborative robot to evaluate painted wooden blocks for color defects and stains. The task was conducted in four scenarios: Support - Leader, Sequential - Leader, Support - Follower, and Sequential - Follower. The human operator visually inspected the blocks, identifying discrepancies such as incorrect pink shades or unwanted stains. Depending on the scenario, the human either led the task—controlling the pace and directing the robot—or followed the robot's instructions, waiting for confirmation before proceeding. In specific conditions, the human determined when the robot should take over the stain inspection. The robot, capable of continuously rotating the blocks, performed this task more efficiently, improving defect detection accuracy while reducing the human's cognitive workload.
(Stanković et al., 2023)	Collaboration in an assembly and disassembly task, where participants worked with a robot to manipulate wooden boards featuring randomly drilled holes and inserted dowels. Participant dismantled two preassembled wooden boards and reassembled one of them with a third board positioned by the robot. The randomness of hole and dowel placement required the participant to determine the correct orientation for assembly, engaging problem-solving, decision-making, and spatial awareness. The task was repeated 15 times under three different robot orientation conditions to analyze variations in human-robot interaction.

(Yerebakan et al., 2025)	Collaboration in a pollination task, where participants interact with a collaborative robot to artificially pollinate a set of 20 simulated flowers organized at two height levels, tested under four experimental conditions: Manual, HRC without indication, HRC with indication, and Unreliable HRC.
(Zakeri et al., 2023)	Collaborating with a collaborative robot to perform a pick-and-place task, involving the classification of boxes based on specific rules (modified Stroop task), with participants also performing a secondary task. The task was conducted under eight different experimental conditions, varying task complexity, robot speed, and robot load capacity.