



PRAVDA REPLIKANTA

THE REPLICANT TRUTH
A NEWSPAPER ABOUT PHYSICAL ARTIFICIAL INTELLIGENCE

BREUKELEN (Netherlands)
Forecast · 2026-11-01 · CET

MORNING · 09:00

☁️ 9.2°

Cloudy
Wind: NW 0.6 m/s · 0%

MIDDAY · 12:00

☁️ 10.7°

Cloudy
Wind: N 1.4 m/s · 0%

EVENING · 18:00

☁️ 10°

Cloudy
Wind: NW 1.2 m/s · 4%

Daily: 7.3–11.3 °C
Precipitation probability: 8%

All we can do is learn to be human while the rain falls.

Weather source: Open-Meteo · Retrieved: 2026-10-31 17:07 CET

Replicant Data — Curious Minds

How robots learn to change tools, move and carry out sequences of actions.

News

Robot tool swapping gains tactile feedback

Different kitchen actions require different tools: a knife cuts, a brush spreads liquid and a spatula turns food. Researchers led by Yunchu Zhang introduced SwapBot, a system that lets a robot arm exchange tools autonomously. The October 29, 2026 preprint describes a research prototype rather than a household appliance ready to cook without supervision.

The architecture uses a fixed coupling on the robot and inexpensive adapters on ordinary tools. This changes the arm's function without requiring a new sophisticated gripper for every task. The authors describe compatibility with different tools, including articulated ones, and multiple robot platforms. The connection must physically secure the tool; merely bringing it close to the wrist would not work.

Compact tactile sensors are built into the adapters. A camera can show where an object is but may not reveal how firmly a tool presses against it. Operators collected demonstrations through teleoperation, then trained imitation-learning policies to select movements from examples. Reported tasks include cooking tofu, stirring salad and flipping meat.

Compared with learning from RGB images alone, adding tactile data increased success by 15 to 25 percentage points in the reported experiments. User studies also found shorter task completion times and lower operator workload during teleoperation. These results concern particular laboratory tasks, not a universal reliability guarantee for every tool and material.

The engineering contribution is a common interface for changing tools, sensing contact and recording demonstrations. It can make comparisons between vision and touch more systematic and allow hardware to be reused across tasks. However, allowable forces, connector wear, swapping speed, cleaning requirements and recovery from failed coupling still need prolonged testing.

The work offers an alternative to building one universal robotic hand: select the tool that suits the action. It does not demonstrate a robot preparing an entire meal autonomously in an unfamiliar kitchen. Wider object sets, unexpected contacts, long duty cycles and independent replication are still necessary before deployment claims become credible.

The useful question is which behavior was actually tested and which remains a research ambition. A successful demonstration is exciting, but understanding the technology also means asking what happened during failures and which test conditions stayed fixed.

Sources
SwapBot: Tool-Centric Robot Manipulation via Interchangeable End-Effectors and Tactile Sensing · 2026-10-29

A quadruped learns to tow a wagon through tight passages

The engineering question is how execution works and which constraints were actually tested. A learned initial motion proposal is refined using model-predictive path-integral optimization and learned forward dynamics. A single robot-wagon system, short test routes and a 15% failure rate leave open questions about general deployment.

A four-legged robot can navigate around obstacles while controlling only its own body. Attach a wagon, however, and every turn becomes a different problem: the trailer wheels cannot move sideways at will, and the combined machine needs more room than the robot alone.

Researchers led by Insung Yang described RAIBO-Wagon on October 29, 2026, a navigation system for a quadruped towing a custom wheeled carrier. The interesting advance is not merely that the robot can pull a load. It is that the controller plans for the linked motion of both bodies in narrow spaces.

The system combines two planning ideas. Conditional flow matching produces a fast initial proposal for how the robot and wagon might move. Model Predictive Path Integral control, or MPPI, then tests and refines candidate commands using a learned forward-dynamics model that predicts how the coupled system will respond. The first component helps the search start near a promising solution; the second can adjust when the environment differs from the examples used for learning. This is a practical compromise between fast learned suggestions and slower physical consistency checks.

The authors tested the system outdoors on 15-meter courses containing confined passages. Sensing and computation ran fully onboard rather than depending on an external computer to plan the motion. They report an 85% completion rate over 40 trials and loads of up to 40 kilograms, nearly the robot's own body weight. Those are measured results on a particular setup, not a claim that all quadrupeds can tow the same load. Fifteen percent of the attempts still failed, and the reported routes were relatively short.

Why pull rather than carry? Wheels can support a heavy payload while legs help a robot negotiate terrain that may be awkward for an ordinary cart mover. The combination might eventually be useful for material handling or inspection support. Yet a real worksite brings slopes, changing friction, people and unexpected obstacles. The paper does not establish months of reliable operation under those conditions. A revealing next test would vary wagon geometry, payload distribution and surface conditions while measuring recovery after a failed turn.

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Sources

RAIBO-Wagon: Real-Time Navigation System for a Legged Robot Towing a Wagon · 2026-10-29

A robot learns to remove screws by separating alignment from turning

The engineering question is how execution works and which constraints were actually tested. A diffusion-based alignment policy is combined with a contact classifier and a force-controlled unfastening controller. The initial engagement stage remains unreliable across variations; angled fasteners were not tested.

Removing a screw looks simple until a robot has to do it. The screwdriver must reach the correct point, align with the head, engage the slot and maintain contact while turning. Hemant Kumar and colleagues presented DAWN on October 29, 2026, a research system that breaks this sequence into manageable parts. Their motivation is automated disassembly, including the recovery of components from used products. A robot that merely detects a screw in an image has not yet solved the mechanical problem of getting the tool to work.

The first component uses a diffusion-based action policy, a learned method that progressively constructs movements from observations, to position and insert the screwdriver. A second model combines visual and force information to decide whether the tip has engaged securely. A third controller handles turning and removal, relying mainly on force feedback rather than slow image-based action generation. The authors impose a reaction-force limit of 20 newtons during this stage. The separation matters because positioning, recognizing contact and applying torque have different sensing and timing requirements.

The experiments used a real Franka Emika robot arm fitted with an electric screwdriver. The researchers collected 199 expert demonstrations for the alignment stage and 6,000 contact images for training the engagement classifier. In a reported comparison, the alignment-and-engagement policy succeeded in roughly half the trials, comparable to trained human teleoperators under that test setup. The contact classifier reached an accuracy of 0.90. Once the tool was properly engaged, the tested removal stage performed much more consistently, showing where the difficult bottleneck actually lies.

This is not evidence that a robot can already dismantle arbitrary electronics without supervision. Screw heads with unfamiliar appearances, changes in lighting and small positioning errors can defeat the initial stage. The researchers did not evaluate non-parallel screw orientations, and they identify sensitivity to variation in the paper. A production system would also need to detect screws on complex assemblies, recover from slips and verify that the surrounding components remain

undamaged. DAWN offers a useful lesson: the hardest part of a seemingly simple task may be establishing the right contact before the visible action begins.

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Sources

DAWN: Diffusion-based Alignment and unfastening Workflow Network · 2026-10-29

A shared humanoid controller supports different skills without retraining

A humanoid that walks to a table must also stop, bend, reach and recover its balance without switching to an entirely new motor system. Yet many robotics pipelines train separate controllers for each behavior. Chen Tessler and colleagues introduced Metatron, a programmable whole-body execution layer that pairs one trained generative motor policy with software-defined skills. The research was submitted on October 27, 2026; a later listing date should not be mistaken for its original publication date.

The base policy accepts partial goals rather than a complete joint trajectory. These prompts may specify timed targets for body parts, velocity commands and movement-style cues. Training combines captured human motion, synthetic recovery trajectories and retargeted motions involving objects and scenes. After that stage, the base policy is frozen. A small stateful program can then produce a rough geometric sketch at every control step, leaving the common motor model to coordinate the robot's joints and balance.

The authors describe skills as ordinary programs, sometimes refined with coding agents that inspect motion data and fit compact rules. On a physical Unitree G1, one unchanged model checkpoint supported walking, recovery, sitting on furniture and object pickup guided by a remote operator. Comparative tests reported better reaching success and resistance to pushes than the reference-tracking systems selected by the authors. The paper also presents climbing and acrobatics, but those results concern a simulated character rather than the physical G1.

The engineering distinction is between reusable motor competence and task-specific control logic. If the separation holds across more environments, new behaviors might be specified with code rather than a new policy-training run. That is a research implication, not a proven reduction in commercial integration cost. The

authors do not establish unattended operation in arbitrary homes, universal contact safety or reliable object recognition. Teleoperated pickup remains teleoperated, and the reported comparisons are limited to the study's test conditions.

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Sources

METATRON: A Promptable Whole-Body Execution Layer for Humanoids · 2026-10-27

Five-finger robot demonstrates order packing at a Tokyo event

Packing an order is not simply a matter of lifting a box. A robot must distinguish small products, position them without damage and handle changes in shape or material. On October 30, 2026, RLWRLD reported a public demonstration of this workflow at KDDI SUMMIT in Tokyo. The event itself took place on October 27 and 28, so the announcement date should not be confused with the demonstration dates. The company described RLDX-1 as its robotics foundation model for controlling physical actions.

The exhibit used a robot equipped with a five-finger hand. According to RLWRLD, it removed a cardboard box from a conveyor, recognized small products of different materials and shapes, including smartphone accessories, and packed them for shipment. This is a description of an event demonstration, not an independent warehouse audit. The announcement supplies no comparable figures for items per hour, failed picks, damaged goods or hours of continuous unattended operation.

For a logistics operator, the real integration questions concern conveyors, inventory data, recovery from misaligned products, worker safety and responsibility for exceptions. A five-finger hand may provide flexibility for varied objects, but that alone does not establish an advantage over simpler grippers or purpose-built equipment. The company also mentions pilot projects with industrial partners; those statements do not establish completed, economically viable deployments. Cost, maintenance and operator workload remain open questions.

A credible next step would be a trial using a representative product mix and predefined measures of throughput, damage, human interventions and cost per order. At present the evidence is a company account of a public

demonstration, with no independent verification of sustained performance. The news therefore signals progress toward applying robotics foundation models to fulfillment work, not proof that arbitrary warehouses can now run autonomously.

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Sources

RLWRLD KDDI SUMMIT 2026 RLDX-1 logistics packing demonstration · 2026-10-30

Analysis

From isolated tricks to verifiable work

Research and demonstrations expand the range of robot actions, but the strength of the result depends on test conditions.

Evaluation should cover failures, repeatability, cost and human intervention as well as successful attempts.

Sources

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DAWN: Diffusion-based Alignment and unfastening Workflow Network · 2026-10-29

METATRON: A Promptable Whole-Body Execution Layer for Humanoids · 2026-10-27

RLWRLD KDDI SUMMIT 2026 RLDX-1 logistics packing demonstration · 2026-10-30

Issue glossary

Key terms in this issue.

01 **tactile feedback**

Touch or force measurements that help a robot respond during physical contact.

02 **diffusion policy**

An action-generation method that gradually refines a possible movement.

03 **dynamics model**

An approximation of how a robot or coupled system moves in response to commands.

04 **teleoperation**

A person controlling a robot remotely, often to provide demonstrations.

05 **five-finger hand**

A robotic hand with five fingers for handling objects of different shapes.

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RLWRLD KDDI SUMMIT 2026 RLDX-1 logistics packing demonstration · 2026-10-30