

AGIBOT Unveils Nezha-Inspired X2-N Humanoid with Wheel Transformation

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Why did this robot just set the robotics community on fire? Take a closer look at its head. Do you see it? More specifically, do you see what's not in it? This robot has no eyes, no cameras.

It moves entirely through data from its joints, motors, and internal balancing system. This is called proprioceptive feedback. The Agibbot X2N was built by Agibbot. It can fluidly swap between traveling on wheels or by foot.

This hybrid locomotion gives it the adaptability needed in real-world situations where the environment can change on a dime. The proprioceptive feedback takes out the delay and complexity that camera-based navigation struggles with. Combined with full body control, it allows the X2N to move like humans do, just taking steps without looking down. The question is, will other robots follow suit?

Teams that have already heavily invested in optical systems like Boston Dynamics Atlas probably won't swap over, but it might give them ideas to further improve their own models. What do you think? What other positives or negatives could the X2n's proprioception have?



The age of the Transformers has officially begun, but these robots are rolling out in Shanghai, not Cybertron! AGIBOT (also known as Zhiyuan) has unveiled their latest creation, the X2-N “Nezha” humanoid robot that brings childhood cartoon fantasies to life with its remarkable transformation abilities. Unlike traditional bipedal robots limited to walking, this mechanical marvel can literally twist its feet sideways and convert them into wheels for rapid transit.

Named after a beloved Chinese mythological hero famous for his magical “Wind Fire Wheels” that allowed instant transportation, the Nezha robot lives up to its namesake. Imagine the practical applications: your personal robot assistant walking down stairs in a building, then transforming into wheel mode to quickly retrieve a dropped item across a long hallway. While quadruped robots with wheel-leg combinations have existed before, this appears to be one of the first bipedal humanoids to successfully implement the wheel-transformation concept. The age of transforming robots isn’t just coming—it’s already here, and it’s wearing wheels for shoes.

AgiBot X2-N: The Hybrid Robot That Walks, Rolls, and Climbs Like a Pro

A humanoid robot known as the **AgiBot X2-N** has stunned robotics enthusiasts and engineers alike with a demonstration that showcases its extraordinary hybrid locomotion system. Seamlessly shifting between walking and rolling, this robot doesn't just traverse flat ground—it climbs stairs, handles slopes, and hauls cargo, all while relying purely on internal sensors instead of visual input.

A Breakthrough in Autonomous Mobility

In a recent test, the AgiBot X2-N was shown rolling on its integrated foot wheels, then switching to a walking gait as it tackled a set of stairs. Once on the upper platform, it transitioned back to rolling mode to continue moving up a sloped path. Most remarkably, the robot accomplished all of this **without using cameras or external sensors**—it operated purely on proprioception, using data from its joints, motors, and internal balancing system.

This kind of adaptability hints at a new class of robot: one that doesn't need to "see" to navigate complex environments. It **feels** its way through the world, just like humans adjusting their step without looking down.

Inside the Tech: How AgiBot X2-N Does It

- **Hybrid Locomotion:** Its legs are equipped with wheels in the feet, allowing it to roll efficiently when possible and walk when needed.
- **Proprioceptive Feedback:** Rather than relying on cameras, the robot uses joint torque, pressure sensors, and internal gyros to gauge ground conditions and terrain shifts.
- **Smooth Gait Transitions:** Real-time control systems enable the robot to fluidly switch between walking and rolling in response to its environment.

This kind of mechanical intuition eliminates the delay and complexity often associated with camera-based navigation, and makes it well-suited for real-world applications where conditions can change rapidly or unpredictably.

Why This Matters for the Future of Robotics

1. **Real-World Utility:** Robots like the X2-N could be game-changers in warehouses, disaster relief, and home assistance—anywhere that mixed terrain makes traditional wheeled or legged robots inefficient.
2. **Efficiency + Agility:** The ability to roll on flat ground conserves energy, while walking enables movement across stairs, debris, or irregular surfaces.
3. **Simpler Systems, Stronger Robots:** By using proprioception over complex vision systems, robots become less fragile, more robust, and potentially cheaper to manufacture.

What Comes Next?

- **More Rugged Testing:** Future demonstrations may challenge AgiBot with rocky terrain, slippery surfaces, or outdoor environments.
- **Potential Commercialization:** As this hybrid locomotion matures, it's likely to be adopted into service robots, delivery bots, or even consumer-facing robotic assistants.
- **Sensor Fusion Innovations:** While this version operates without cameras, future models might combine internal awareness with vision for even smarter navigation.

Final Word

The AgiBot X2-N represents a quiet revolution in robotics—not by seeing more, but by **knowing more internally**. It doesn't just mimic human movement; it rethinks how intelligent mobility should feel from the inside out. With a design that's both clever and practical, it's paving the way for a generation of robots that move with confidence, precision, and purpose—wherever the path may lead.

Chinese Robotics Firm Agibot Unveils Dual-Terrain Mode Humanoid Robot

Chinese robotics company Agibot (智元机器人) has introduced the X2-N, a humanoid robot designed with a unique dual-mode locomotion system that allows it to switch between bipedal and wheeled forms. This innovative feature aims to enhance the robot's versatility and ability to navigate complex and varied environments.

In bipedal mode, the X2-N can climb stairs while carrying loads of up to 12 pounds. In wheeled mode, it can handle obstacles such as single-sided bridges and ramps.

The dual-mode functionality reflects advancements in robotics that aim to enhance adaptability across different environments. Potential applications for the X2-N include logistics, healthcare, and public services.

Agibot, a Shanghai-based startup established in February 2023 by former Huawei engineer Peng Zhihui, has rapidly gained traction in the robotics sector. The company's focus is on developing AI-powered humanoid robots for diverse applications. [Source: Agibot]

Agibot unveils humanoid robot 'X2-N' with dual-mode locomotion system

Product updates

- Agibot, a China-based robotics company specializing in humanoid robots for manufacturing, logistics, and education,

has unveiled the "X2-N," a humanoid robot equipped with a dual-mode locomotion system that transitions between bipedal walking and wheeled movement. The robot can climb stairs with loads up to 12 lb in bipedal mode and tackle ramps and narrow bridges in wheeled mode.

- The X2-N uses proprioceptive sensing instead of cameras or external sensors, relying on internal data such as joint torque, pressure feedback, and gyroscopic input to interpret surroundings. The robot can switch between rolling on flat ground and walking to climb stairs, with rolling mode saving energy on smooth surfaces while walking mode provides access to uneven or obstructed settings. Its vision-free navigation approach reduces complexity, eliminates latency, and enhances system robustness compared to camera-based systems.
 - Agibot claims the X2-N provides a more robust and economical platform, with potential applications in logistics, healthcare, and public services.
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China Unveils X2-N Humanoid Robot with Wheels-for-Feet Mobility. Chinese robotics company AgiBot has introduced the X2-N, a humanoid robot capable of switching between walking and wheeled movement to navigate complex terrain.

The X2-N uses a hybrid locomotion system that allows it to climb stairs in bipedal mode and traverse ramps or narrow bridges in wheeled mode. It can carry loads up to 5.4 kg while walking. Unlike traditional robots that rely on cameras or external sensors, the X2-N uses proprioception—internal data such as joint torque, pressure feedback, and gyroscopic input—to sense and adapt to its environment in real time.



This sensor-less navigation mimics human intuition, enabling the robot to adjust posture and movement without visual input. The approach reduces system complexity, eliminates latency, and enhances robustness. A demonstration video shows the X2-N rolling across flat ground, switching to walking mode to climb stairs, then returning to wheels to ascend a slope, highlighting its terrain adaptability.

The X2-N is based on AgiBot's Lingxi X2, a 1.3-metre-tall humanoid robot weighing 33.8 kg. Introduced in March 2025, X2 blends AI and robotics, capable of walking, running, dancing, turning, scooter riding, and cycling. Lingxi X2 features a multimodal interaction system that responds within milliseconds by analyzing facial expressions and vocal tones to detect

emotional states and deliver context-aware responses. Its design includes simulated breathing, subtle body language, and passive observation, enhancing emotional expressiveness. It can also perform basic object manipulation tasks without prior training.

These capabilities are powered by AgiBot's Genie Operator-1 (GO-1), an AI model that supports zero-sample generalisation and multi-robot coordination. GO-1 uses latent actions and a transformer-based Latent Planner to improve decision-making and motion execution. In benchmark tests across five tasks, GO-1 increased robot success rates from 46% to 78%, with notable improvements in complex tasks like pouring and refilling. The Latent Planner alone improved planning efficiency by 12%. Potential applications for the X2-N include logistics, healthcare, and public services. Future versions may integrate visual input with proprioception to enhance situational awareness.

Wheeled Robot Can Cruise All Kinds Of Terrains On Its Four Hybrid Legs



Image via [LimX Dynamics](https://limxdynamics.com)

Robot company LimX Dynamics recently introduced its first-ever wheeled quadruped robot, named W1.

This creation, built upon the foundation of the firm's motion intelligence technology, showcases an amalgamation of cutting-edge perception and motion control algorithms, along with proprietary high-performing actuators.

Fusing two worlds, the W1 combines the advantages of legged and wheeled structures into a single, versatile platform.



Image via [LimX Dynamics](https://limxdynamics.com)

More importantly, the designers focused on equipping the robot with real-time terrain perception capabilities and exceptional all-terrain mobility so that it could provide a substantial improvement from traditional legged robots to achieve real-world use.

The key? The robot's actuators. These components maximize the integrated capabilities of both legged and wheeled structures, resulting in high-dynamic motion and the ability to conquer challenging terrains.

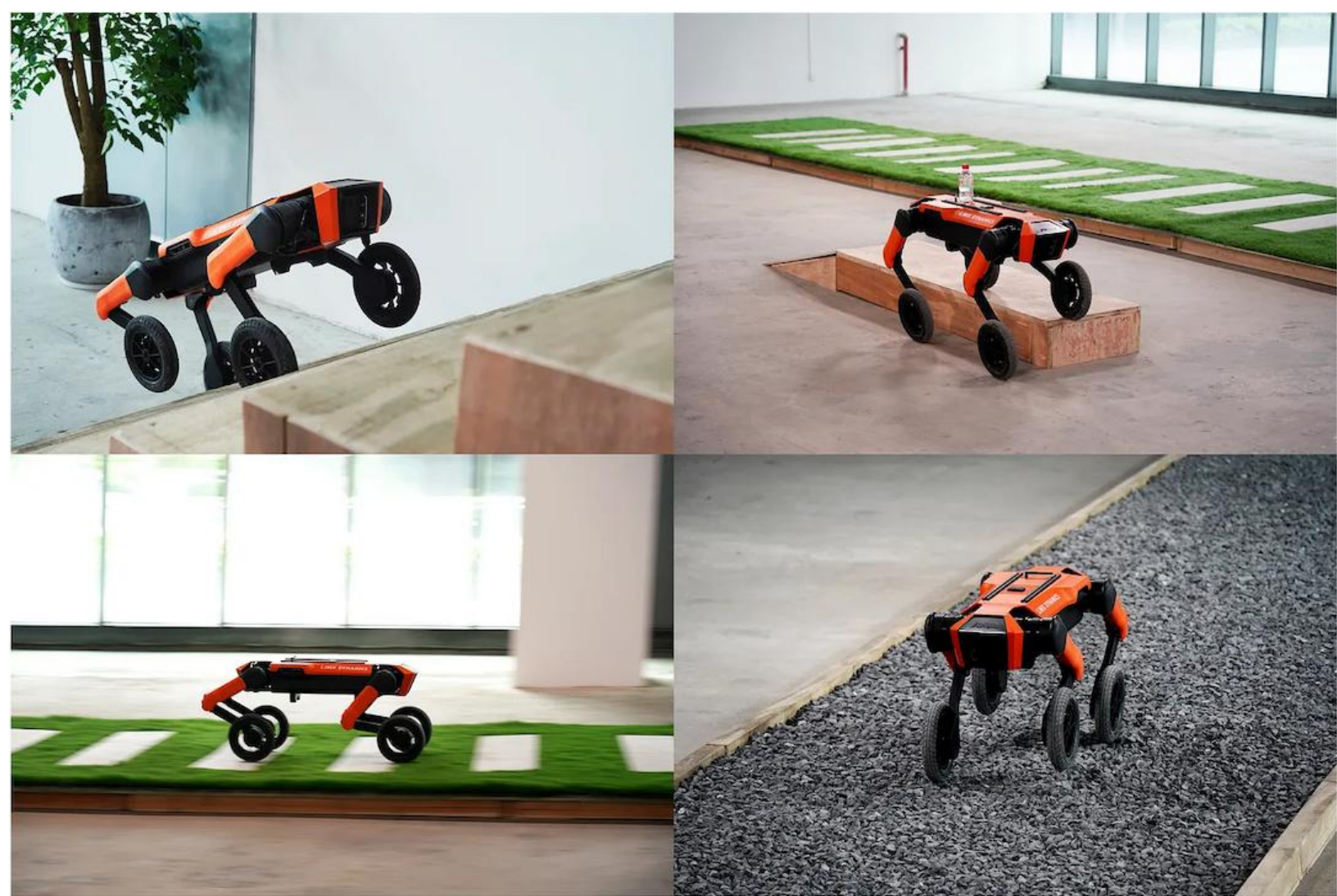


Image via [LimX Dynamics](https://limx.com)

Compared to traditional quadruped robots, the W1 robot is more efficient and agile. Plus, its perceptive locomotion algorithms enable it to navigate extremely challenging terrain, even climbing stairs.

In the real world, the robot offers highly dynamic motion, is able to ascend and descend slopes, navigate road curbs, adjust ground clearance during high-speed movement, cross one-sided bridges, traverse grass and slate roads, and even handle gravel roads.