Acumino

How Acumino is Solving Commercial Robotic Manipulation

Audrey Woods | MIT CSAIL Alliances

In an era of declining birth rates, aging populations, and growing labor shortages, robots are often seen as a potential solution. Robotics promises to accelerate production, streamline manufacturing, support existing workforces, and generally improve quality of life.

But turning that vision into reality is no small task. Many companies and researchers are advancing technologies like sensors, computer vision, and human-robot interaction. Patrick Jarvis, President and Founder of CSAIL Alliances Startup Connect Plus Member Acumino, says his team identified a largely overlooked challenge: what he calls "the touch problem." Few researchers were focusing on the critical path of reliable, hyper-precise, embodied manipulation required for delicate commercial tasks, as well as bringing robots into everyday environments. "We made the decision to focus on the end stage of the robotics problem and begin solving from that point."

Today, with multiple engagements across international markets and sectors, Acumino is excited to deepen collaborations with CSAIL researchers to tackle the next wave of challenges in robotics.

ACUMINO: A GENERAL ROBOTIC INTELLIGENCE
Jarvis and co-founder Tom White bring decades of experience in AI and robotics, having worked on some of the most widely deployed AI systems in homes, cars, and businesses. Prior to Acumino, they ran a services firm that helped top tech companies scale their AI models from lab prototypes to commercial systems supporting hundreds of millions of users. But robotics, they realized, presented fundamentally different challenges.

"AI for robots is different. We saw serious roadblocks in scalability and data acquisition. There were major issues with both sourcing high-quality training data and with the embodiment problem, especially in grasping and manipulation."

Partnering with co-founder Dr. Minas Liarokapis and his lab in New Zealand, they focused on developing robotic models capable of exceptionally precise grasping and manipulation. This research led to the formation of Acumino, derived from the Latin word for "to sharpen skills," reflecting the team's mission to build adaptable, highly capable robotic systems.

"The robot has to do exactly what you need, out of the box, every time," Jarvis says. "We've always focused on ROI—if a robot makes a mistake, it's not just inconvenient. It can cause real damage. A fraction of a millimeter of misalignment can be the difference between profit and loss. From the start, our goal was to quickly surpass 99% reliability, meeting human-level performance on new, high-variability tasks. That required a different approach."

To achieve this, Acumino has built a no-code, single-shot trainer that allows clients to teach models quickly and with high accuracy without needing to invest in expensive hardware upfront. This method far exceeds the precision of standard teleoperation, enabling customers to validate deployments efficiently and at scale.

Acumino's technology is currently in trials with a major German automaker, a large Japanese marine engine producer, and other international manufacturers. "Our system runs on standard robots and hardware and can be deployed on-site with strong data privacy and local control."

CSAIL ALLIANCES: COLLABORATING FOR IMPACT

Acumino's mission is ambitious, but far from complete. To tackle the next generation of challenges, the company is connecting with institutions like MIT through CSAIL Alliances. "We're here to solve entirely new classes of problems while recognizing that AI is evolving rapidly," Jarvis explains. CSAIL was a natural fit, and Acumino joined the Alliances program at the suggestion of their deep-tech venture partner and CSAIL Alliances Affiliate, LDVP.

Since joining, Acumino has actively engaged with the CSAIL Alliances community, benefiting from its vibrant network and collaborative spirit. "The access to researchers and companies focused on real-world deployment has been incredibly valuable," says Jarvis. Through Alliances, Acumino has already met several collaborators and partners and hopes to continue expanding these connections.

Looking ahead, the company is preparing to attend the 2025 CSAIL Alliances Annual Meeting and will host a Tech Talk on campus to interact with researchers and students. "Boston has a thriving ecosystem," Jarvis says. **"We're deliberate in our approach—we believe in facing the hard problems head-on. If there's a big challenge to be solved, MIT is where you go."**

SHAPING THE FUTURE: INNOVATING SYSTEMS AND REVITALIZING ELDER CARE

While Acumino's current deployments are focused on manufacturing and industrial robotics, the team designed the system from the very beginning to take on even greater challenges. "We are already solving some of the toughest problems for factories," Jarvis says, "but our ambition is much broader. We built this technology to eventually tackle some of the most important problems in society, like accelerating elder care."

Jarvis highlights that "by 2050, 35% of Japanese citizens will be over 65, with a majority living alone," and the United States faces a similarly pressing demographic shift. This presents a challenge not only in manufacturing—where robots could enable older workers to remain active and support a shrinking workforce—but also in accelerating elder care, which is becoming an immense economic and social burden. If left unaddressed, "this issue will be a huge financial problem for every major developed economy in the world. It's not just a monetary problem. It's a care problem and a dignity problem. Robots will never replace human caregivers, but if a robotic assistant could alleviate even 70% of the repetitive tasks, it could transform lives."

The Acumino team is seeking collaborators who share their vision. "We're not just focused on what can be achieved tomorrow," says Jarvis. "We're thinking of what is possible five years ahead, asking what must be true to solve these problems at scale and how we begin building that today." One advantage of Acumino's technology is its ability to accurately and transparently assess feasibility, clarifying what is truly possible with physical AI and when.

For more information about CSAIL Alliances industry engagements, please visit:

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With their technology already delivering measurable results, Acumino is eager to tackle some of society's most pressing challenges in manufacturing, labor, and beyond. They are committed to a future where robots improve lives and, in collaboration with MIT CSAIL, they are dedicated to turning that future into reality.

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