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DAC

Digitization, Automation, Cross Industry Collaboration

U.S.- S. Korea Partnerships are the Perfect Match Driving AI Robotics Innovations

Exploring the Synergy Between S. Korea's Robotics Leadership and U.S. AI Innovation for Collaborative Opportunities



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The global AI in robotics market is projected to grow from \$12.3B in 2023 to \$146.8B by 2033, reflecting a CAGR of 28.12%. AI in robotics involves incorporating artificial intelligence technologies, such as machine learning and computer vision, into robotic systems. This integration empowers robots to not only perceive and learn from their environment but also to adapt autonomously, enabling sophisticated interactions with humans and machines alike.

In terms of end use, applications for AI robots are expansive, with automotive, retail, and manufacturing use cases leading globally.

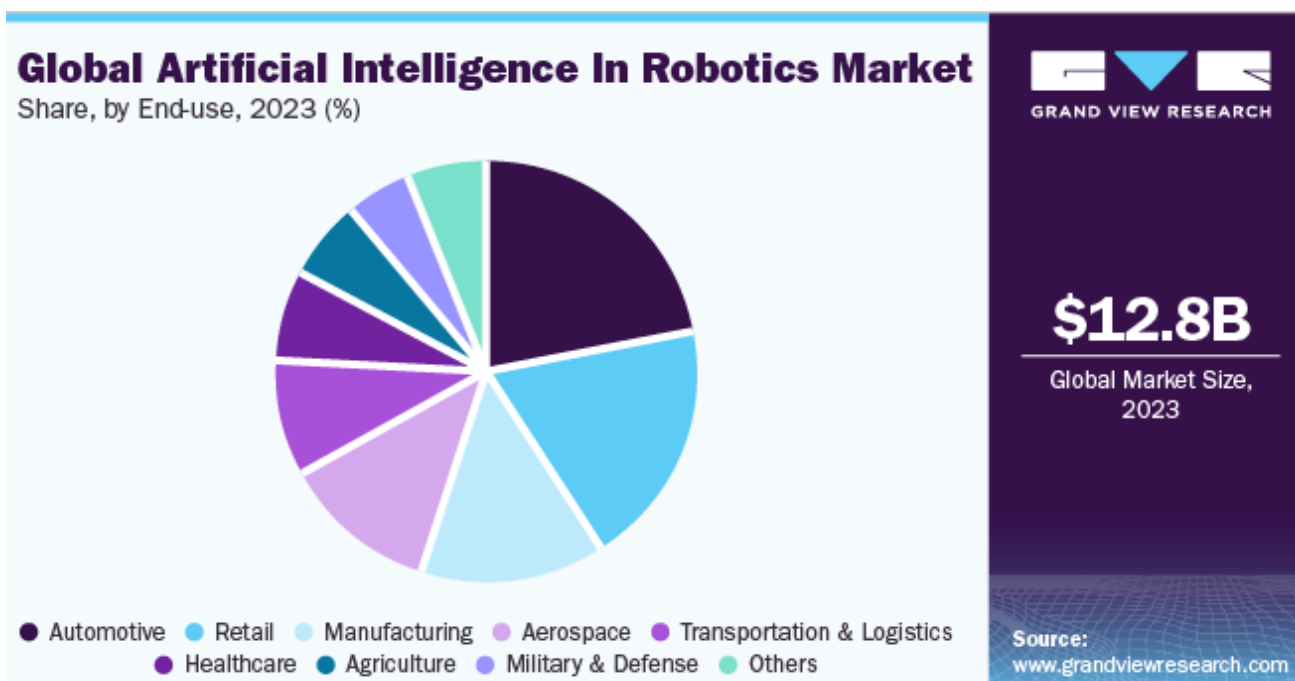
North America leads the market, holding over 41% share, supported by a strong technological infrastructure and active venture capital investment.

Where are the U.S. and S. Korea in the AI robotics market?

Meanwhile, the AI robotics market in S. Korea is projected to reach \$347.40M in 2024, with an annual growth rate of 25.29% from 2024 to 2030. S. Korea has gained a leadership position in early robotics adoption and the highest robot density in the world, with 1,012 robots installed for every 10,000 manufacturing workers. This is more than six times the global average.

AI Robotics Use Cases Across Industries

Source: Grand View Research



S. Korea is at the forefront of robotics innovation, with significant government investment in research and development. The Ministry of Trade, Industry and Energy (MOTIE) has announced the Fourth Intelligent Robot Basic Plan (2024-2028), aiming to invest over \$2.24B by 2030. This initiative focuses on enhancing the local manufacturing rate of core robot parts from 44% to 80% and addresses 51 regulatory obstacles to foster industry growth.

While S. Korea remains a leader in robotics technology, the global market comparison shows that the U.S. leads in overall revenue, with an expected \$9.42B in 2024.

One of the key reasons for the U.S.'s revenue growth is their leadership position in AI innovation.

While S. Korea leads robotics innovation, the U.S. leads global AI innovation, driven by market-based initiatives and substantial private investment. Over the past five years, venture capital investment in AI reached \$290B, with transformative applications in autonomous vehicles, healthcare, and IT infrastructure. Projections suggest AI could contribute 0.5% to 1.5% to annual GDP growth, potentially adding \$1.2 trillion to \$3.8 trillion to the U.S. economy over the next decade, solidifying its leadership in the AI race.

U.S.-based entities are actively exploring collaborations to merge cutting-edge research with practical implementations. Integrating hardware and software capabilities is critical to AI innovation, and U.S. players are strategically positioning themselves at the helm of these collaborations by launching initiatives across industries.

For example, Iowa State is home to the AIIRA (Artificial Intelligence in Agriculture Research Alliance). This initiative focuses on fostering collaborations across the global AI ecosystem to enhance U.S. agricultural practices using AI technologies. AIIRA partners with leading technology innovators, startups, government agencies, commodity groups, centers, NGOs, agriculture organizations, and international innovators. Technology collaborations include drones and robots for agricultural applications.

In this issue we analyze the global application of AI in the robotics market, with a focus on U.S. and S. Korean technology collaborations, including hardware and software integrations.

Key Cases of U.S.-S. Korean AI Robotics Collaborations Across Industries

Merging the U.S.'s leadership in AI innovation with S. Korea's leadership in robotics innovation is allowing both countries to leverage their respective strengths to develop cutting-edge solutions that address challenges in various industries.

There has been a surge in partnerships between U.S. and S. Korean companies, highlighting how AI robotics technology is being applied across different industries. See key examples below.

Rockwell Automation (U.S.) and Doosan Robotics (S. Korea):

Rockwell Automation, the largest company focused on industrial automation, signed a Memorandum of Understanding with Doosan Robotics and its parent company, Doosan Corporation, during a summit celebrating the 70th anniversary of U.S.-S. Korea relations.

The collaboration between Rockwell Automation and Doosan Robotics is set to transform smart factory construction. **The partnership will focus on integrating S. Korean robots and controllers and developing automation solutions for smart factories and other applications.**

Anduril (U.S.) and Hanwha (S. Korea):

In the military and defense industry, Anduril teamed up with Hanwha Defense USA to develop an Uncrewed Ground Vehicle (UGV) for the U.S. Army's Small Multipurpose Equipment Transport (S-MET) Increment II program.

Arion-SMET unmanned ground vehicle

Source: *The Defense Spot*



The Army plans to acquire 2,000 next-generation S-METs, adding to the 624 ordered from General Dynamics Land Systems in 2020. The partnership aims to deliver a UGV with significant load-carrying capacity and advanced modular architecture, providing tactical support to dismounted infantry.

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***City of Fairburn (U.S.) and Hills Robotics
(S. Korea):***

Hills Robotics **signed a diplomatic letter** to start a collaboration with the City of Fairburn, Georgia for enhancing logistics and supply chain management. The collaboration is aimed at exploring technology expansion and investment opportunities in the region, including advanced robotics and AI solutions.

The partnership aligns with Fairburn's ongoing economic development goals. Fairburn's Mayor, Mario B. Avery, expressed enthusiasm for the potential benefits of this agreement, emphasizing its role in attracting investment and creating jobs. City officials **noted that this cooperative effort is just the beginning of a broader collaboration, with a focus on strategic investment and tourism.** Hills Robotics' expertise in robotics technology is expected to significantly improve operational efficiency in Fairburn's public sector and logistics industries.

Boston Dynamics (U.S.) and Hyundai Motor Group (S. Korea):

Hyundai Motor Group and Boston Dynamics have launched the Boston Dynamics AI Institute, backed by an initial investment of **over \$400M.**

Led by Boston Dynamics Founder Marc Raibert, the AI Institute aims to tackle significant challenges in developing advanced robotics and artificial intelligence. It will focus on four core technical areas: cognitive AI, athletic AI, organic hardware design, and ethics and policy.

Marc Raibert, Founder of Boston Dynamics

Source: The AI Institute



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The AI Institute plans to recruit top talent in AI and robotics, partnering with universities and corporate research labs to drive innovation. **Its mission is to create smarter, more agile, and safer robots capable of performing a wider variety of tasks.**

As partnerships between S. Korea and the U.S. continue to grow, they will not only enhance operational efficiencies and technological capabilities but also contribute to economic growth and job creation.

To further explore trends in S. Korean and U.S. technology collaborations and best advise readers on getting started, we interviewed 3 robotics innovators with experience navigating global markets.

INTERVIEW

Interview with Interview with Knightscope - Security Robots

William Santana Li is the Chairman and Chief Executive Officer of Knightscope, a position he has held since April 2013. With over 30 years of experience in the global automotive sector, Li has been instrumental in steering Knightscope toward its mission of making the world a safer place through technology.

Before joining Knightscope, Li held numerous leadership roles in prominent companies, including Ford Motor Company, GreenLeaf LLC, and Carbon Motors Corporation. Li was interviewed to share his insights on the key factors for S. Korean innovators seeking to foster growth and gain technology collaborations in the U.S. market.

**William
Santana Li**

Chairman and
Chief Executive
Officer of
Knightscope



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THE U.S. IS NOT MONOLITHIC - DISTINCT DIFFERENCES ACROSS EACH REGION

Suzy: Please introduce yourself, focusing on your status as a leading robotics innovator in the U.S. market.

Knightscope: I am the Chairman and CEO of Knightscope, where we develop fully autonomous security robots and emergency communication devices. Our goal is to empower officers and security guards with advanced tools to enhance their capabilities, enabling them to perform their duties more effectively. Our long-term mission is to contribute to making the U.S. the safest country in the world.

From my experience working across four continents, I've learned that every market is unique. **Even within the U.S., the country is not monolithic. Each region—whether suburban, rural, or urban—has its own distinct climate, preferences, and culture.** This diversity is even more pronounced on a global scale. Knightscope is over 11 years old, and there is growing pressure for us to explore opportunities outside the U.S. and expand internationally.

Now that we've operated for over 3M hours across the country and are active in every time zone, we've seen clients renew their contracts for two, three, four, and even up to eight years. We've also had some impressive crime-fighting successes. **Everything people once said was "impossible" and would never work, we've made a reality.**

OVERCOMING INITIAL SKEPTICISM BY INNOVATING SOLUTIONS FOR PRESSING NATIONAL PROBLEMS

Suzy: How has Knightscope carved out a niche in the robotics sphere? What types of success cases have contributed to your growth?

Knightscope: We take a decidedly different approach, focusing solely on one mission: public safety. While we receive numerous requests to develop robots for various applications, our priority is addressing the significant issue of crime. Crime has a staggering \$2 trillion negative economic impact on the U.S. each year, with a violent crime occurring every 26 seconds and a property crime every 4 seconds.

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We don't have the luxury to explore other applications of robotics; our goal is to solve a pressing problem for the nation.

From this perspective, certain sectors are particularly important to us. **For instance, hospitals operate 24/7, with constant foot traffic, often experiencing staffing shortages and security needs. Similarly, casinos also run around the clock, adding cash, alcohol, and drama to the mix.**

The list of our contributions continues to grow. **This excites me because we were initially told that our vision would never work, that the complexities of hardware and software would be insurmountable and that our technology wouldn't be helpful to society. Yet, the fact that clients renew subscriptions for five to nearly ten years speaks volumes about the value we create for them.**

A MULTITUDE OF CONSIDERATIONS AND APPROACHES ARE NEEDED TO SECURE PARTNERS

Suzy: Can you expand upon the process of securing such partnerships? How do you typically meet new partners or collaborators?

Knightscope: Our partnership process often starts with **word-of-mouth referrals**. For instance, securing our first hospital was quite challenging, but once we established a presence, it became easier to partner with subsequent hospitals. The same pattern applies to casinos and parking structures.



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We have a unique approach to trade show marketing. Typically, we begin with an online video webinar to discuss potential problems that organizations might be facing and explore how we could help.

If there seems to be a good fit, we might arrange for a demonstration. **We have what I like to call a "robot aquarium" that travels across the country, showcasing our technology.** Prospective clients can see, touch, and interact with the robots directly at their locations. **So far, we've completed over 120 stops nationwide, which has been instrumental in helping people acclimate to this new technology.**

The **Robot Roadshow** has been our most effective show to meet potential partners, because it engages many decision-makers. **Often, one sponsor might attend, but they'll want to involve city council members, the mayor, the chief, the sheriff, and IT personnel in the discussion.**

By the time you're done, there can be 20 to 30 people involved in the decision-making process. So, we thought, why not bring the robots to their doorstep and have that conversation right there? It's a smart approach.

Understanding the client's needs is also crucial, so attend conventions and trade shows where the end users are present.

For example, if you're in logistics, go to logistics events. If you're involved in biomedical applications, engage with that community.

Once you've clearly identified the problem, you can then return to robotics trade shows to explore which servo motors or sensors you need to address it. It's essential to become fluent in the challenges faced by your end users before attempting to design a solution.

GEOGRAPHY AS A STRATEGIC FACTOR: ENHANCING PARTNER TARGETING IN THE U.S. ROBOTICS LANDSCAPE

Suzy: As you mentioned, the U.S. is not monolithic. How does geography play into a successful partner targeting strategy?

Knightscope: Being in the **right geographic location with the right network is also crucial.** In Silicon Valley, this is particularly important because many entrepreneurs are aware of each other's challenges and are often willing to help.

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When you meet someone here, the conversation typically starts with, "What do you do?" From there, people naturally think about how they can connect you with others who might be able to help. This collaborative spirit is less common outside of Silicon Valley.

Your location can significantly influence your success in forming partnerships. Right now, around 20% of venture capital funding in Silicon Valley comes from major corporations, which indicates that everyone has some presence here.

With the abundance of accelerators and networking events, it's easier to find the right firm or individual who can connect you to the right parts of an organization. **While remote work is becoming more prevalent, the value of building relationships in person cannot be overstated.**

COMBINING DIFFERENT TECHNOLOGIES TO CREATE MAGIC

Suzy: What about technology collaborations with fellow innovators? For example, I know Knightscope recently announced an exciting collaboration with Dragonfly to integrate drones with your robots.

Knightscope: It's important to consider our mission: to enhance security because criminals and terrorists can be anywhere. For Knightscope to be effective, we must also be everywhere.

Securing an underpass, critical infrastructure, or a pipeline is vastly different from securing a school, church, or federal courthouse. Each environment requires unique capabilities and form factors. **A lot of times, individual products may lack certain capabilities, but by combining them, you can create some magic.**

We're always focused on exploring acquisitions and partnerships that will accelerate our revenue growth. Technologically, we're interested in anything that can help us see, feel, hear, smell, speak, and autonomously cooperate.

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Our goal is to give the U.S. a massive AI public safety infrastructure upgrade. We're certainly interested in chatting with potential collaborators about that.

**STRONG POTENTIAL FOR U.S.
AND S. KOREA ROBOTICS
COLLABORATIONS WILL EXPAND
OVER THE NEXT 10 YEARS**

Suzy: According to a recent study by the International Federation of Robotics, South Korea leads in robot workforce deployment, with 1,012 installed units per 10,000 employees, compared to the U.S., which has 285 per 10,000 employees. Given South Korea's leadership in designing and deploying reliable robotics, what potential collaboration opportunities do you foresee between the two countries?

Knightscope: There are always opportunities for us to evaluate technologies outside the U.S. We seek technologies that can enhance the security of Americans and deter those who might cause them harm. Our goal is to make it very difficult for potential threats.

If we can partner with, import, or utilize technology readily available elsewhere that benefits U.S. citizens, we will continue to explore those opportunities.

S. Korea has a tremendous culture focused on technology. There's always a lot of cool innovations coming out of the region.

This is only going to accelerate with the full implementation of AI (not just for chatbots and that sort of stuff). There's a tremendous amount of opportunity to accelerate capabilities, new materials, new technologies, new ways to use data, new sensors, etc. Overall I think the next 10 years are going to be fascinating.

INTERVIEW

Interview with Interview with Bear Robotics - Hospitality Robots

Juan Higueros is the Co-founder and Chief Operating Officer of Bear Robotics, a company that is paving the way for indoor self-driving robots to work alongside employees in restaurants, hotels, casinos, ghost kitchens, senior living communities, and corporate dining halls. Before this role, he served as a Director in Strategy and M&A at KPMG and as Director of Corporate Development at Polycom.

We interviewed Juan to learn about how Bear Robotics was formed as a collaboration example between the U.S. and South Korea. His insights provide valuable guidance for South Korean innovators seeking to create similar demand and opportunities in the U.S. market.



**Juan
Higueros**

Co-Founder
and COO at
Bear Robotics

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**INNOVATING ROBOTICS WITH THE
EMPLOYEE'S PERSPECTIVE AT THE
FOREFRONT**

Suzy: Bear Robotics is uniquely positioned with co-founders from both the U.S. and South Korea, showcasing a strong example of global collaboration. Can you explain the company's origins and how this blend of perspectives has shaped Bear Robotics' journey so far?

Bear Robotics: Our co-founder, John Ha, was raised in S. Korea and later attended Seoul National University before earning his PhD at UT Austin in Texas. Around 2016, after spending seven or eight years as a software engineer at Google, John decided to take on a completely new challenge—he bought a Korean restaurant in Milpitas, California. He saw it as a fun project, but quickly realized how difficult running a restaurant could be. This experience sparked his interest in how robotics and AI could address some of the challenges faced in the hospitality industry.

John's restaurant became a live lab for testing initial prototypes of our technology.

We experimented with automating tasks like food delivery and assisting servers, addressing issues that are common not just in the U.S. but also globally in countries like Japan and Korea.

What makes Bear Robotics unique is that we began from the perspective of restaurateurs. John's own experience running a restaurant gave us grassroots-level insights into the real challenges of the industry. We built our solution from the ground up, iterating on the product to address common pain points faced by restaurateurs everywhere.

This is how Bear Robotics started. **There's a lot of, there's actually very few robotics and or AI companies in the U.S. that kind of have a little bit of a Korean flair.**

**SCALING A FLEET OF
RESTAURANTS WITH SERVICE
ROBOTS FOR EARLY USE CASES
THAT SHOWCASE
DIFFERENTIATORS**

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Suzy: How are Bear Robotics' offerings different from others, similar ones that are on the market?

Bear Robotics: The biggest differentiator for us is **our ability to manage and scale our fleet efficiently.** We have a unique advantage because two of our co-founders came from Google. **We've brought that Google mentality and talent to Bear Robotics, which has really set our software and fleet management capabilities apart.**

We're probably the only company that is able to deploy up to 100 robots operating at once in a very, very clean and efficient way.

One example that stands out is a restaurant in a rural area of S. Korea, near the North Korean border. This restaurant started with around 15 to 20 robots due to staffing shortages, and now they operate up to 40 robots at the same location. **These robots run consistently from 11 a.m. to 9 p.m., working together seamlessly, communicating well and making nearly 20,000 meal deliveries per month.**

What's impressive is not just running one, two, or three robots in a restaurant, which is common in the U.S., but managing a much larger fleet. We've even tested up to 100 robots working at once.

Bear Robotics' Flagship Product, Servi



Source: *The Robot Report*

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WORKING AS CONSULTANTS TO END-USERS FROM INTEGRATION TO TRAINING STAFF

Suzy: What is the process like working with end-users to deploy your robotics, especially for those who have no prior experience with these systems?

Bear Robotics: Coming from the hospitality industry, we understand how much of a service first and people-driven business it is. **Our focus is always on finding the best way for their workflows to integrate these new tools.**

We really thought through the way human-robot interaction would enable staff to use our robots in a friction-less manner. Do you want the staff constantly bending down to get the food? Should the robot verbally communicate when the food arrives? Should lights or other visual cues indicate when a customer can take their food? These fine details matter in a significant way. **Our robot can cue both the customer and the server, letting them know whose food is where.**

These little considerations are critical when thinking about human-robot interaction, not just for servers but also for the overall customer experience.

We take tremendous pride in our product planning process—not just in being solutions-oriented, but also in acting as consultants to the restaurateurs we work with. Many of our customers tell us they love how Bear Robotics stays consistent and keeps them connected to the product. For some, this technology is new, so we ensure they get comfortable, and once they do, they use it to its fullest potential.

We've had instances where our robots run for almost a full 16- to 24-hour shift, which is really impressive. That level of usage shows they're being fully utilized. **Beyond hospitality, our robots are also in places like senior living homes, airline lounges, corporate campuses casinos, and ghost kitchens. It's exciting to see that expansion because dining facilities exist in all kinds of venues, not just traditional restaurants.**

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SECURING A PARTNERSHIP WITH A GLOBAL TECHNOLOGY LEADER

Suzy: Bear Robotics recently secured a \$60M Series C funding round from LG Electronics. What do you think motivated their investment, and how do you anticipate it will influence your future developments in expanding hospitality?

Bear Robotics: The CEO of LG Electronics visited us right before CES this January. There are a few key factors at play. LG is a globally recognized brand, not just in S. Korea, and we're humbled that they have shown such confidence in us to continue to build cutting-edge technologies for the future.

When they evaluated our company, they recognized our technical capabilities and how far along our talented engineering teams have taken our development as compared to others in the marketplace.

I think that impressed both him and his team the most. They saw that we could effectively demonstrate our ability to deploy solutions rapidly, efficiently, and on a large scale, which was a significant breakthrough that truly gained their confidence in Bear.

Although we're a small company compared to their vast resources, they saw the tremendous potential in our solutions. They recognized the opportunity to invest in the future of our technology. Ultimately, LG led the entire funding round, with no other investors involved.

One great thing about LG is their strong relationships across various sectors, which will significantly benefit us. **This partnership will help introduce us to venues beyond just hospitality, as they operate in almost every vertical.**

We're exploring opportunities in factories, warehouse spaces, and even some areas of healthcare. LG has a strong presence in hospitality, and we're eager to leverage that.

S. KOREA IS 15 YEARS AHEAD OF THE U.S. MARKET FOR MANY TECHNOLOGICAL DEVELOPMENTS

Suzy: Since you're operating in both the U.S. and South Korean markets, can you share any unique perspectives on the differences and synergies between these markets, particularly in the AI robotics sector?

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Bear Robotics: What's really cool about S. Korea is that they are pushing boundaries and advancing incredibly fast. I believe much of that innovation will eventually reach the U.S., especially in its evolution of smart cities, which will integrate well with robotic solutions like ours. **S. Korea is often at the forefront of many technological developments.**

For instance, some of the features we now take for granted in the West—like mobile payments—were commonplace in S. Korea 15 years ago. It's fascinating to see what's being conceptualized and implemented not only in Korea but also in parts of China and Japan, as these innovations will likely transfer here eventually.

Observing these early developments helps us also identify potential pitfalls, almost like getting answers to an exam ahead of time. When you enter major markets like the U.S. or North America, you already have an earlier sense of the pain points to address, which is quite interesting.

ADVANTAGES OF BUILDING ROBOTICS TECHNOLOGY IN S. KOREA

Suzy: **S. Korea has the highest robot density globally, does that environment influence your product development and market strategy?**

Bear Robotics: Absolutely. The speed of prototyping and idea generation at the early stages is remarkable. **We considered doing this in the U.S., but found that the efficiency and speed were even better in Korea.**

The cultural differences may play a role in how quickly we can bring products to market, but it was impressive to see how rapidly things can be prototyped in Korea—sometimes within days—compared to weeks it would take in the U.S. This level of efficiency is critical for a growth stage company like Bear.

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These efficiencies have been a significant advantage for us, especially since we've had a local presence in Korea since early on, which has allowed us to leverage the benefits of an excellent team in Seoul with great pride around our mission, culture and values that we all truly benefit greatly from.

I hope the AI revolution will be centered here in Silicon Valley, as many believe it will. A lot of the exciting developments are happening right here for what most expect many more years to come, and having a dual presence has greatly benefited us. to build the best robots with the best technology behind them for the world to experience.

The Road Ahead: Opportunities for Korean SMB Robotics Innovation in the U.S.

Success in the U.S. market hinges on **strategic partnerships and smart collaboration. Technology collaborations** are essential for tapping into new market waves, creating opportunities that traditional sales channels might not reach.

By focusing on solving specific industry challenges through technology partnerships, S. Korean small and medium-sized enterprises (SMBs) can effectively engage in the expanding U.S.-S. Korea AI robotics ecosystem.

S. Korean robotics developers have a unique opportunity to showcase their leadership in the U.S. market. With years of experience deploying AI robotics across various industries, Korean innovators can leverage their expertise to develop and prototype solutions more rapidly than their U.S. counterparts.

As the U.S. seeks to accelerate its adoption of AI robotics, S. Korean companies are well-positioned to pursue technology collaborations with both large and small U.S. robotics innovators. These partnerships can extend across various industries, addressing specific needs through advanced robotics solutions. Firms should focus on highlighting their proven industry experience from the S. Korean market, educating potential partners on the advantages of their technology and approach.

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Building and utilizing local networks is crucial for success in the U.S. market.

S. Korean robotics companies should actively participate in industry events, conferences, and trade shows, in addition to creating their own company branded events. With the right strategy in place, these gatherings can provide invaluable opportunities for discussions that could lead to significant collaborations.

Remember, the right conversation at the right time can open doors to partnerships that drive rapid innovation and market growth.

If you are interested in potential partnerships and long-term relationships with the companies mentioned in this article or others in the U.S./ S. Korea, contact Suzy at sim@bdmtglobal.com.

Suzy Im

As the head of BDMT Global in Boston, Im focuses on accelerating the innovative transformation of global companies. She is a Professor of Marketing and a member of the Advisory Board at Emerson College. Im is co-founder of 'Sponsors of the Future,' a non-profit organization that leads corporate social responsibilities. Well-known business development marketing strategist in the global field for over 20 years. After merging the two critical global business functions of Business Development (BD) and Marketing Transformation (MT) for the first time, she was recognized for her innovative business model and contribution and received five consecutive awards in the U.S. including the North American Business Awards and TITAN Business Award 2022 in Biotechnology.

