
Robots in Our new Society

2021.03.25.

Korea Institute for Robot Industry Advancement

J. Kim

Cooking (Robot Chicken)

시승센스

3곳 중 1곳의 가짜를 찾아라, 이색 치킨
셰프 없는 주방, 로봇치킨

tvN

모두 숨죽여 로봇을 기다리는데...

Robot Cafe B;EAT

HO

C

metatron

달려 달려

Lifestyle (Department store media robot)

Robot optimized for the era of unmanned stores



Integrit
'CUBRICK Robot'

'The Hyundai Seoul', a flagship store opened in Yeouido
Started commercial service of AI media robot 'CUBRICK'

- Autonomous media robot
- Coronavirus prevention robot
- Delivery service

Feb. 2021

Lifestyle (Hospital autonomous robot)



DS1 : Injection medication
autonomous delivery

DS2 : Linen
autonomous delivery



Olive : Outpatient guide

Transporting high-risk drugs and goods
Use of finger vein authentication system for narcotic drugs or anticancer drug injections

Logistics (Robot Crane)

Transportation using a robotic crane

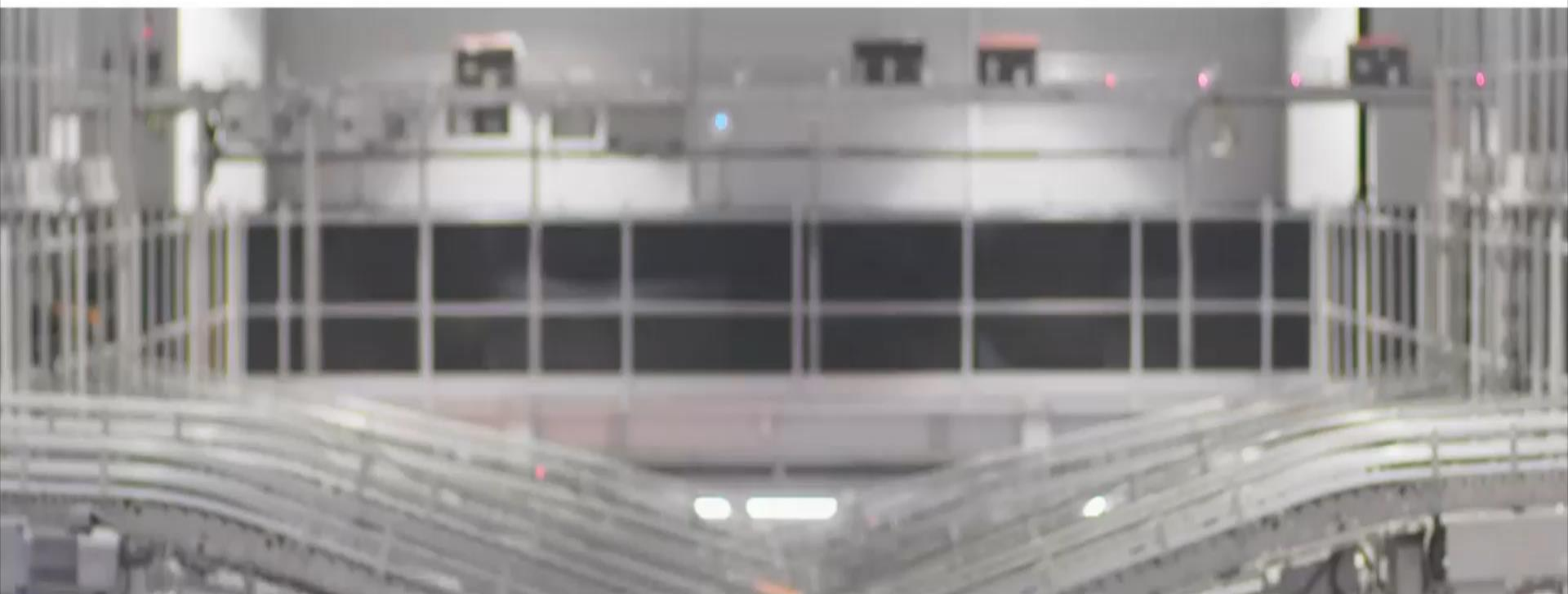
emart



E-Mart, Cheonggyecheon Branch

- Store-type distribution center
- Transporting goods through conveyor belts
- Crane robot delivers goods
- Automation system construction

July 2020



Food serving/delivery (Indoor)

우아한형제들 * 배달의민족



2019

Dilly Drive

2020

Dilly Tower

Short-distance
moving on sidewalk

Introduced autonomous
driving and safety devices

Moveable via elevator

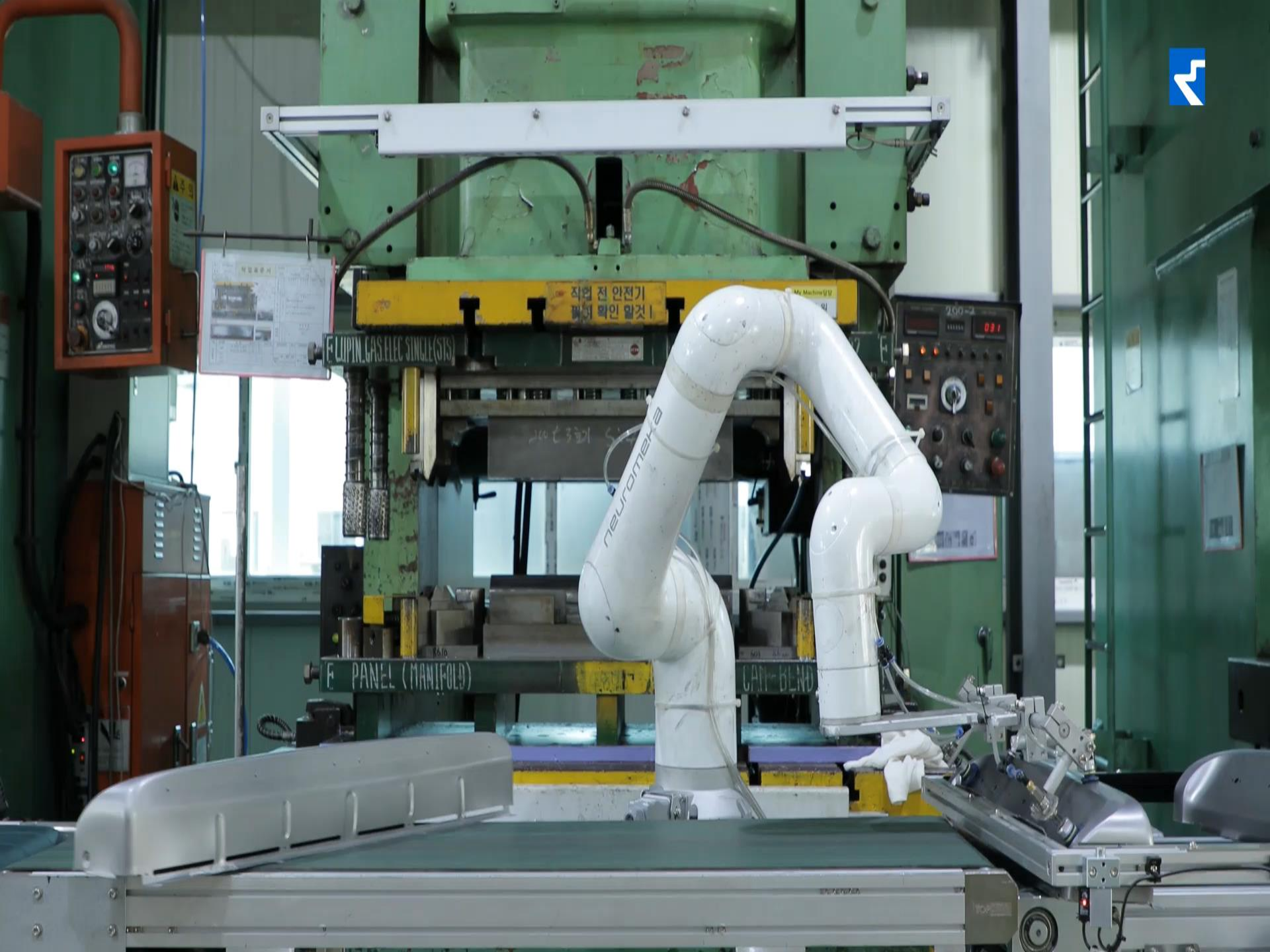
It takes the elevator by itself and delivers to your home's front door!

배민 로봇 서비스 사업 활발

산업
NEWS

우아한 형제들, 본사 건물에 '딜리타워' 운영





Hyundai 's investment

Hyundai Buys Boston Dynamics for Nearly \$1 Billion. Now What?

Boston Dynamics contemplates its future as it gets swallowed (again) by a giant corporation

By Evan Ackerman



Photo: Bob O'Connor

Boston Dynamics, once owned by Google's parent company, Alphabet, and then by Japanese conglomerate SoftBank, now belongs to South Korean carmaker Hyundai.

This morning just after 3 a.m. ET, Boston Dynamics sent out a media release confirming that Hyundai Motor Group has acquired a controlling interest in the company that values Boston Dynamics at US \$1.1 billion:

Hyundai will own approx.
80% of Boston Dynamics

2013 Google



2017 SoftBank



2020 Hyundai



Top Korean conglomerates focusing on Robots

Major conglomerates in Korea(Samsung-, Hyundai Motor-, LG Group, etc.) have chosen **Robot** as one of the leading businesses of the future, and are intensely concentrating their investments therein.



With the prospect that robot technologies can be utilized in various ways for health care and other industries, they are actively working on achieving technological competitiveness.

Hyundai includes Robotics in the Top 3 Future Businesses



Automobile, UAM and **Robotics** as the Top 3 Future Businesses

Hyundai Motor Group established `New Horizons Studio` in Silicon Valley and is focusing on researching into new-concept mobility that combines robot with automobile

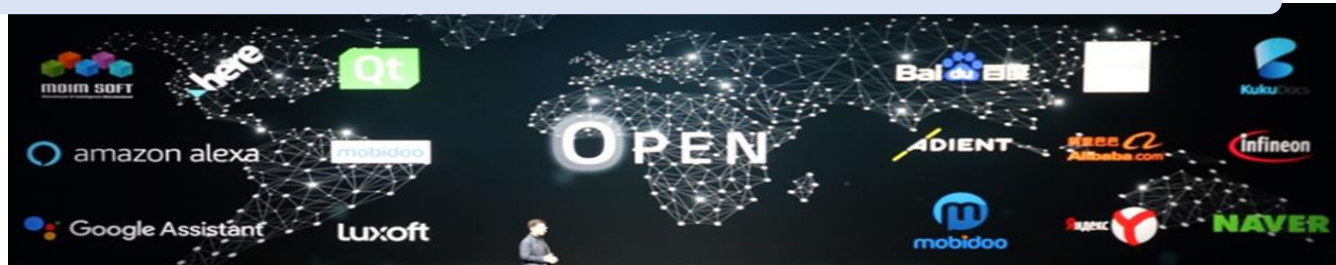


Hyundai's new-concept mobility

Future of LG Robot, “Investment” and “Cooperation”



Strengthen the competence of robot businesses based on the open innovation



LG, 미래 먹거리 로봇 · AI 사업 현황

인재	H&A 사업본부, 캐나다 토론토 AI 연구소 등 로봇 · 머신러닝(음성인식) · AI 인력 확충 중 LG 사외이사로 신성장동력 발굴 전문가인 김상현 전 네이버 대표 선임 예정	
투자	로보스타(산업용 로봇)	538억원 투자해 지분 20% 확보 ...내년까지 33.4% 확대
	로보티즈로봇 동력 구동장치	지분 10.1% 확보
	아크릴(감성인식 AI)	10억원 투자해 지분 10% 확보
	SG로보틱스(웨어러블 로봇)	기술협력
서비스	고객 서비스에 로봇과 AI를 접목한 '챗봇' 개시, 가전 및 스마트폰에 AI 기능 탑재	

*자료: LG전자 및 업계 종합

- ✓ Joint development of self-driving module
- ✓ AI (Emotion recognizing AI)
- ✓ Wearable

Nov. 2020



LG Uplus,
Cooperates with domestic and foreign companies on `eco-friendly autonomous electric bus` project

LG CLOi SERVEBOT

Current state of Samsung's robot business – 1

SAMSUNG



Management moves of the Vice Chairman, Lee Jae-yong

<Future design strategy> - “Let's make a design revolution”

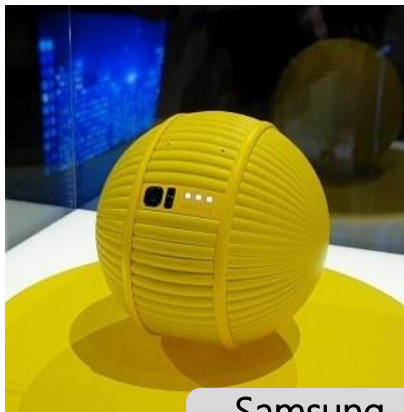
Exercise-, sleeping-, eating habit management robot
/ Serving-, delivery-, guide robot

Nov. 2020

Robot project to improve personal life <Samsung Bot platform>



Samsung Bot
Care



Samsung
Ballie



Samsung Bot
Chef



Samsung Bot
Air & Clean

Current state of Samsung's robot business – 2

SAMSUNG

Samsung Electronics and Kakao cooperate to graft AI onto private appliances and enable personalization

Mar. 2021



Optimizing the consumers' lifestyles with Samsung home appliances by catering to each tastes

AI-cleaning, automation of home appliances → Building customized home solutions

Current state of Samsung's robot business – 3

SAMSUNG

CES 2019

Samsung Venture Investment

Investment in Philo Health, an American AI medical robot company



Samsung Venture Investment

Investment in a home AI robot development start-up Tripo Series A

Nov. 2018

Sep. 2020

The wearable walking aid robot 'GEMS Hip'

The first Korean company that obtained the international standard certification 'ISO 13482'



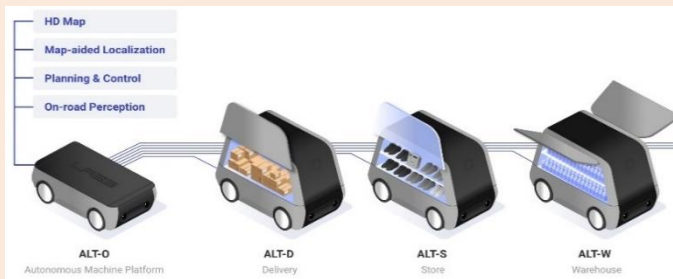


NAVER presents even more advanced robot

'AMBIDEX' : Robot arm that learns human's kinesthetic intelligence

Naver develops haptic device exclusively for Ambidex

- ⇒ Extracts power control ability as learning data
- ⇒ Remote control that conveys power in both directions to human and robot



'ALT Project'

Develops on-road autonomous mobile robot platform

Automation of delivery- and logistics service through self-moving space

'Around Series'

Autonomous mobile delivery robot without LiDAR sensor

- Based on vision tech and reinforcement learning
- Intuitive interaction with human



=> Will be used for NAVER's second company building

Around Series by. NAVER



A futuristic, metallic, conical device, possibly a piece of advanced technology or a weapon. The device has a smooth, polished surface and a flared top. The word "AMBIDEX" is prominently displayed in a glowing, white, sans-serif font on the upper, narrower section of the cone. The device is flanked by two complex, mechanical-looking structures that appear to be part of its assembly. The background is dark and indistinct, suggesting a high-tech or industrial environment.

AMBIDEX

Logistics (Wearable Robot)

Wearable Robots→ enhance work capabilities



Samdasoo

- Prevent musculoskeletal industrial accidents
- Reduce worker's physical fatigue
- Power assist



Lotteria

- Reduce up to 16KG weight
- Alleviate pressure on worker's back
- Increase delivery convenience

Robot status and statistics

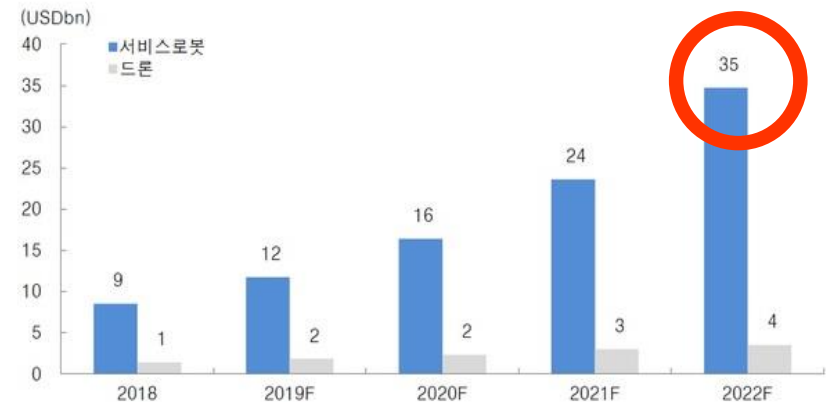
Number of industrial robots sold worldwide (Unit: 1,000 units)



Global industrial robots
average increase rate of 14%
(Steady increase trend)

Service Robot, Future outlook in Korea

그림 225. 서비스로봇과 드론의 시장 전망



자료: IFR, Drone Industry Insights, 대신증권 Research Center

International Federation of Robotics (IFR):
Service robot market

Expected to grow at an annual average of
42.2% by 2022

The Private leads and the Government supports policies



Covid19 ~ Expansion of private-led robot utilization and strategic alliance (private-led)

Thank You