



Everyday Life Quarantine Robot for the Post-Coronavirus age **Contactless Care Robot**



CONTACTLESS CARE ROBOT



Our New Daily Life: Social Distancing and Everyday Life Quarantine

Are investments in budgets in disease control, labor and resources functioning correctly and having the expected effect?

Check List!

- Define the role of the manager responsible for the prevention of infectious diseases and assign a dedicated workforce
- Develop guidelines and train people on the prevention and control of infectious diseases
 - Procure, operate and manage equipment for virus prevention such as sterilizers, sanitizers, thermometers, body temperature sensors, and air purifiers

Evaluate and improve the performance of the prevention and control of infectious diseases (Display informational notices and posters about everyday life quarantine, place hygiene products such as hand sanitizers, check whether people are wearing masks and disinfect surfaces)



Efforts in everyday life quarantine are still needed even with the development of vaccines, which is why a sustainable everyday life quarantine system is necessary.

Everyday life quarantine that requires manual work and human intervention is not sustainable. However, an automation-based sustainable everyday life quarantine system is made possible using AI, Data, 5G, and robotics.

Everyday Life Quarantine Robot, a feat of K-Quarantine pride and advanced 5G technology



A cutting edge anti-epidemic solution for **communal** and **public facilities**

Contactless Care Robot covering all places where social distancing and daily-life quarantine are necessary.



- Temperature checks for facility users and visitors
- Frequent testing by an autonomous mobile robot that detects symptoms and takes immediate actions when anomalies are found
- Manages the hygiene and sanitation of areas that do not have hand sanitizers in place
- Immediately recognizes whether people are wearing face masks and provides voice guidance after discernment
- Activates voice guidance when people are not complying with social distancing rules
- Assesses the appropriate time to ventilate air using temperature, humidity, and air pollution information collected in real-time
- Sterilizers a facility's surfaces and communal spaces without the risk of creating aerosol by using UVC
- Ability to plan anti-epidemic measures through preset schedules programmed into the LTE/5G-based autonomous mobile robot
- Manages the robot centrally, minimizing the reliance on manual work, and as s result, provides a sustainable way to maintain anti-epidemic measures

SKT's AI, data, robot, and 5G technology enable its valuable partners to maintain sustainable daily anti-epidemic measures.

Facility Management

Sterilization (UVC sterilizer, hand sanitizer); environment sensor (provides information on temperature, humidity, and air pollution)

Robot-based quarantine automation

Autonomous indoor mobility with route setting, scheduling, and collision avoidance function

Management of visitors

Al based preventive measures (facial recognition, temperature check, discernment of whether people are wearing face masks and practicing social distancing); Information guidance (everyday life quarantine promotional videos and voice messages)



Centralized Management

Remotely manages data collected and generated by the LTE/5G-based autonomous mobile robot on a dashboard

Data-oriented anti-epidemic measures

Supports data-oriented antiepidemic decision making through a comprehensive analysis using Al-based facial recognition, body temperature data, distribution of non-mask wearers, and data collected by indoor environment sensors

Keemj

Functions Provided by the Robot

Keemi's unique functions

Al based Detection Virus disinfection System 24 hour/day Scheduling Information Guide Robot & Telecommunication Sensor & Data

Al-Based Detection

AI based preventive Measures

SK Telecom's "Vision AI" technology based everyday life quarantine and social distancing

Keemi is a self-driving robot that ensures everyday life quarantine measures, moving around in a facility for 24 hours a day based on a preset schedule, to see if social distancing is being practiced, to assess how clustered the people in the facility are, and to discern whether people are wearing masks. It is able to completely bridge the gaps created by conventional thermometers or temperature measurement kiosks.

Working 24 hours a day, 365 days a year.

✓ Facial temperature check



- Face recognition
- Facial temperature measurement



✓ Mask wearing check



- Human face recognition and confirmation of whether the person is wearing a mask with AI technology
- Facial mask wearing check and voice guidance



✓ Social distance check



- Recognition of human body and face with AI technology AI Technology: Human recognition
- Calculation of distance between persons using a 3D camera 3D Camera: distance calculation
- Voice guidance for distance non-compliance Voice Guidance: Warning





Anti-Virus System

Anti-epidemic sterilization function

A smart robot that takes care of spots beyond human reach

SK telecom's quarantine robot, Keemi, helps staffs and visitors to sanitize their hands wherever you are. It can also thoroughly sterilize every corner of surfaces, which are not reachable by quarantine managers, with UVC.







SK telecom Keemi

- Maximizing exposure to UV with lamps placed in parallel on the left and right sides of the robot for thorough sterilization
- Working effectively in surface sterilization, including ATMs, chairs, exhibition displays, etc. which people frequently touch.
- Sterilizing frequently, based on the predefined schedule, removing viruses, bacteria, fungi, and spores.
- Stopping the sterilization for safety when the robot detects a human



Day & Night Scheduling

Daytime/nighttime activities

"Epidemic prevention" is the brand power itself in the post-coronavirus age

Visitors are greeted by staff members responsible for anti-epidemic measures and temperature sensors when they first enter a major facility such as a company, a school, a bank or a public institution.

In today's post-coronavirus age, a visitor's first experience with a facility starts with the anti-epidemic measures in place.

SK telecom's Keemi provides visitors with an unparalleled user experience based on trust and reliability. In addition, you can leave a deep first impression of the facility on visitors by displaying the company or brand logo.



Information Guide Function

Information Guidance Function

Everyday life Quarantine messenger

SK Telecom's anti-epidemic robot, Keemi, kindly provides voice guidance for temperature checks, social distancing, and mask wearing.

Daily anti-epidemic measure guidelines can be kindly provided to visitors without using too many posters or frequent broadcasts that exhaust visitors' eyes and ears.

Furthermore, key information and public notice can be guided through the 22-inch monitor on the back of the robot.





Robot & Communication Function

Hyperconnected Robot

Keemi : Autonomous mobile robot

SK Telecom's Keemi supports LTE/5G telecommunication and can operate anywhere.

It can effectively perform anti-epidemic measures based on a preset schedule because it is hyperconnected, both indoors and outdoors.

The Autonomous Mobile Robot (AMR) module has already been used in the industrial automation line, which is why navigational safety can be assured.



In Autonomous Moving

- Optimal route search and autonomous navigation
- AI-based recognition of surrounding environment and humans
- Self-diagnosis and remote support management (with 5G/LTE application)

Sensor & Data Analysis

Environment sensor and data analysis function

Everyday Life quarantine based on real-time data

Keemi uses its LTE/5G telecommunication function to provide real-time information about its condition, operation and data measured from its sensors.

This enables anti-epidemic managers to monitor live everyday life quarantine activities anytime and anywhere through a dashboard that converts the data collected into graphics.

Contactless Care Robot Software SK tel SK to SK Ð End Day Bart Day Brid Day Start Duy Meda 0 1 <u>प्रम</u>् भाषात 9 15.25 9 9 119 9 **8**864 9 9 0 9 Robot Battery Indoor Environment Sensing UV & Hand Sanitizer Ŷ - Battery balance display - Temperature, humidity - Sensing hand sanitizer shortage - Automatic docking/recharging - CO2, TVOC (total volatile organic compound) - Controlling UVC sterilization lamp: UVC Map & Scheduling Social Distancing (Ultraviolet "C" subtype) IJ - Route setting and robot location display - Body Detection germicidal lamp setting - Quarantine location and work scheduling - 3D Depth Calculation setting Face & Mask Detection Communication (- Face Thermal Detection - LTE/5G Connection ęę - Facial Mask Detection - VPN Support

Real-time indoor environment monitoring management

The government demands that everyone ensure indoor air properly ventilated with outdoor air frequently. When is the most appropriate time to ventilate air?

It is best to ventilate and purify air based on indoor temperature, humidity, atmospheric pressure,

acceleration, CO2 level, toxic gas, and indoor dust information.

This is why Keemi performs anti-epidemic measures based on real-time indoor environment data using its environment sensors.





Technical Specification

	Item	Specification
H/W	Robot	Size : (WxDxH) 500x700x1500mm
		Weight : 160 kg
		Speed : min 0.05 m/s, Max 0.9m/s
	Charging Time	With 220V power supply: 4H
	Operating Hours	UV-C Mode: 4H (continuous); 8H (general)
		Standby Mode: 10H
	Camera	Thermal imaging camera: 1EA; visible image camera: IEA
		Facial temperature measurement in mask: measurement up to 10 people; temperature/mask detection range: up to 5M.
	UV Sterilizer	Surface sterilization with UV-C wavelength (UV lamp output strength X time)
	Environment safety sensor	Temperature/humidity/atmospheric pressure/acceleration
		CO2, TVOC (volatile organic compound detection)
	Hand sterilizer	Liquid per spray: 0.7~0.9cc; load of up to 1.8L
	Display Monitor	Rear: 22″ DID Monitor (advertising video; image output, etc.)
	Touch Monitor	Front: 15" Touch Panel
S/W	Camera image processing	Al-based face/body recognition
	Sensor processing	Sensor signal processing and monitoring
	Guidance broadcasting	User-programed texts and conditions for broadcasting
	Remote monitoring	Robotic condition monitoring and dashboard
	Mobile Robot	Mapping setting during first installation on site
Network	5G/LTE/WIFI	Selective network per telecommunication environment (separate subscription)
A/S	Warranty period	One year after purchase
	Care service package	Separate service agreement (including one year for first purchase)
Caution		1) Use of the robot for medical purpose is prohibited.
		2) The specification and design of the robot are subject to partial change before official product launch.



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