

5G CUSTOMER SERVICE ROBOT

MOLEKIU LIMITED - OPEN GROUP (TEAM)



Molekiu Limited

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WHO ARE WE

MEET US

Our Company - Molekiu Limited



💡 Molekiu Limited is a company which provide end-to-end robotics solutions for our clients.

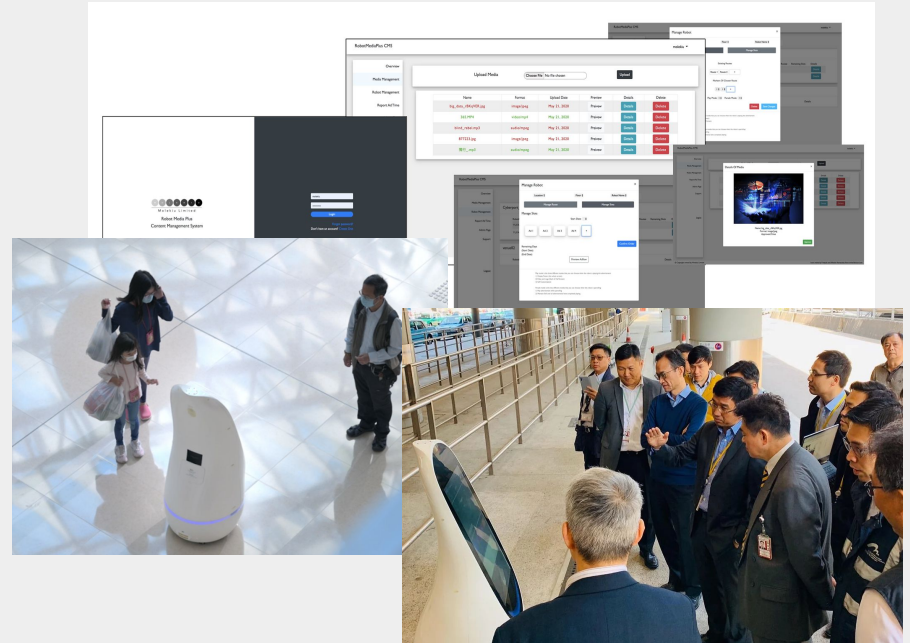
We provide

- 1) Robots
- 2) Cloud & Mobile Applications
- 3) Hardware Support
- 4) Our Experience in Implementation

as part of our solutions to create

- 1) New Revenue Source
- 2) Reduced Costs
- 3) Improved Customer Experience

for our clients

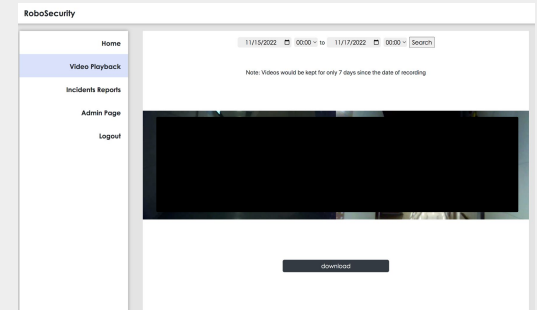


Our Company - Our Focus



 **Molekiu Limited focuses on developing and providing robotic cloud services.**

- We focus on developing **Robotic Cloud Services**, which are compatible with robots from multiple manufacturers
- This is what makes us different from a typical robotics company. We don't manufacture robots, we provide end to end robotic solutions and cloud services which can be used by robots from different companies
- Example platforms that we have built in the past include:
 - RoboConcierge- A Cloud platform that enable our robots to manage the robot, which includes the scheduling of robot tasks, the routes of the robots and the promotion materials that it should display
 - RoboSecurity - A Cloud platform that enable live monitoring and conduct analysis
- Building platforms as such enable our robots to extend their functionalities of which they were designed and built for

A screenshot of the RoboSecurity web interface showing an "Incidents" table. The table has columns for Date, Time, Event, Robot, Status, and Follow-up. The data shows a series of "Person Detected in Closing Hour" events for "robot_1" with a status of "Outstanding".

Date	Time	Event	Robot	Status	Follow-up
Wed, 14 Nov 2022	03:31	Person Detected in Closing Hour	robot_1	Outstanding	View PDF
Wed, 14 Nov 2022	03:32	Person Detected in Closing Hour	robot_1	Outstanding	View PDF
Wed, 14 Nov 2022	03:32	Person Detected in Closing Hour	robot_1	Outstanding	View PDF
Wed, 14 Nov 2022	03:31	Person Detected in Closing Hour	robot_1	Outstanding	View PDF
Wed, 14 Nov 2022	03:31	Person Detected in Closing Hour	robot_1	Outstanding	View PDF
Wed, 14 Nov 2022	03:31	Person Detected in Closing Hour	robot_1	Outstanding	View PDF
Wed, 14 Nov 2022	03:36	Person Detected in Closing Hour	robot_1	Outstanding	View PDF
Wed, 14 Nov 2022	03:37	Person Detected in Closing Hour	robot_1	Outstanding	View PDF
Wed, 14 Nov 2022	03:37	Person Detected in Closing Hour	robot_1	Outstanding	View PDF
Wed, 14 Nov 2022	03:33	Person Detected in Closing Hour	robot_1	Outstanding	View PDF

Below the table, there is a "Patrol Statistics" section with a date range selector (Jan - 2022) and a "Search" button. It displays "No. of Incidents: 0" and "Total patrol time: 17:09:56.0833333 min". There are also buttons for "Refresh View" and "Refresh List".

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THE PROJECT

THE BACKGROUND & OBJECTIVE

Property Management



Property Management

The property management industry is facing the manpower shortage of quality security guard.

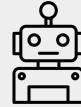
Customer Service



Customer Service

Customer Service staffs are flooded with repetitive tasks everyday. Not only are they boring, but they stops staffs from handling more sophisticated tasks.

Single Purpose Robot



Single Purpose Robot

Most of the robot that exists in the market are single-purpose robots. They can only conduct the specific tasks that they are designed to do.

Opportunities



Opportunities

Due to the problems mentioned, opportunities arise for us, we can enhance a robot which can solve the problems addressed.

Objectives

💡 Our solution enables our robots to equipped with both customer service and patrol functionalities



Customer Service

1. **Guide** customers to specific locations
2. **Promote** upcoming events
3. **Connect** customers to Service Counters
4. Perform Free Parking Hours **Redemption**

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We Aimed To Have 8 manhours of carpark redemption handling and data inputting saved each day.

Patrol

1. **Patrol** in a specified route
2. Real Time Person Detection
3. Send incident reports and alerts to security officers
4. Real time monitoring and record videos



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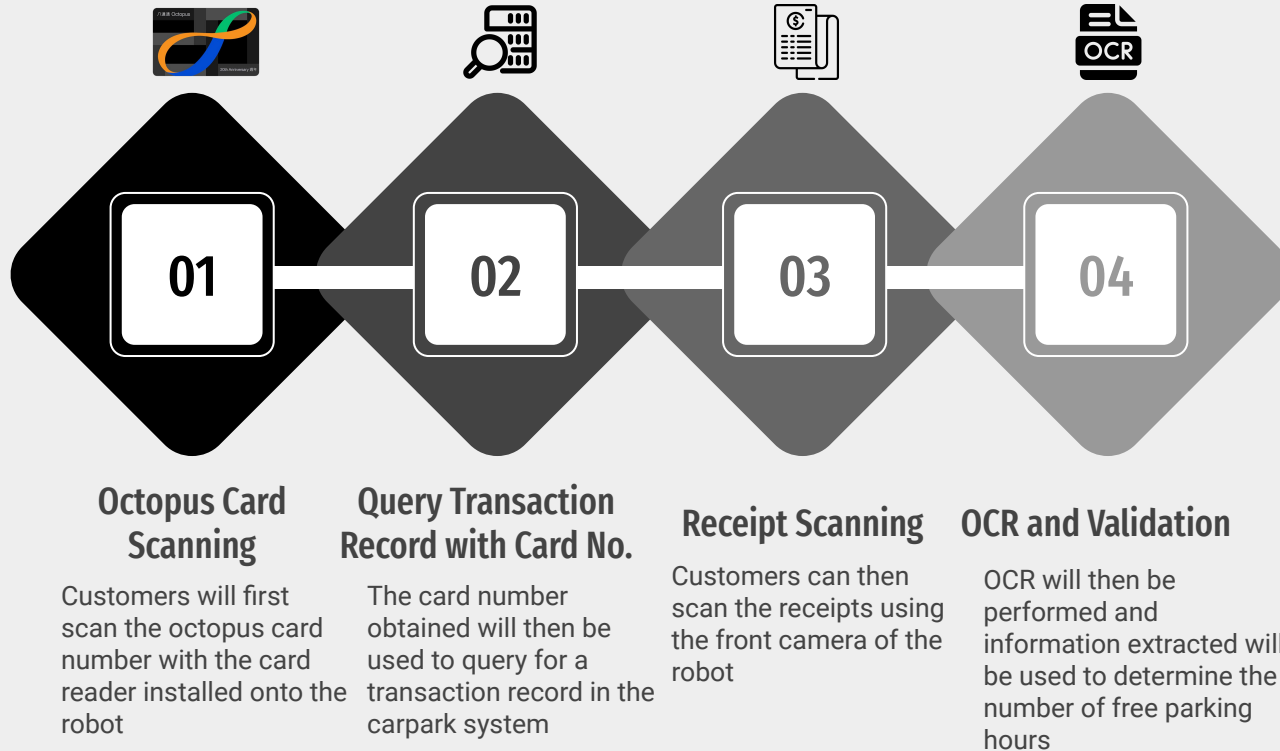
We Aimed to Have 3 manhours of Patrolling at night saved for each day.

3

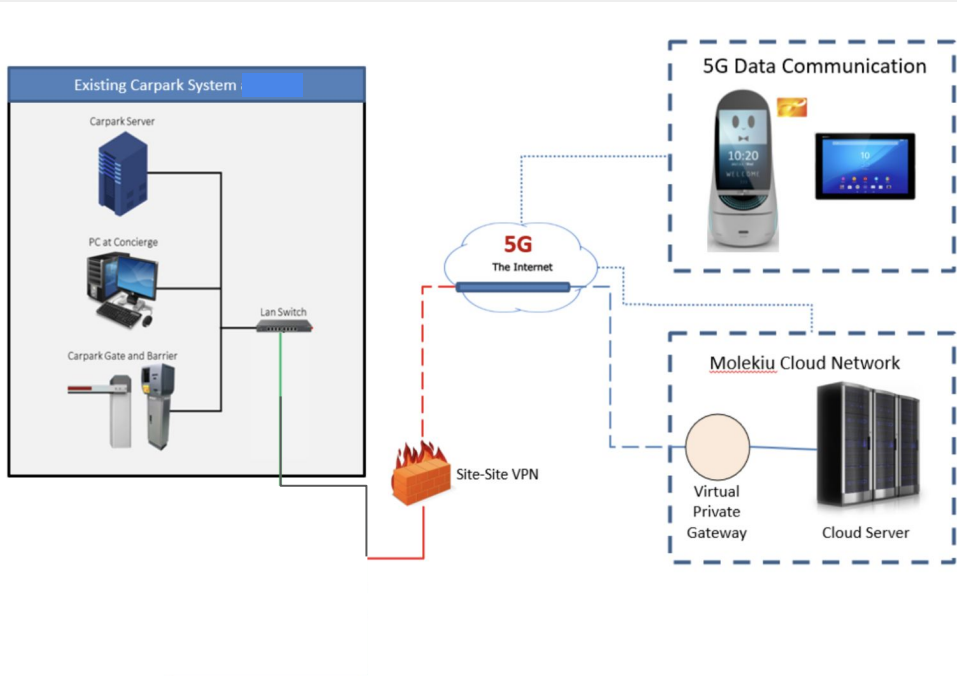
INTRODUCTION

TECH APPROACH & FUNCTIONALITY

Car Park Redemption Flow



Car Park Redemption System



Step 1: Robot will send information to our web app deployed in cloud for further processing

Step 2: Our web application will access the mall's database for querying via site to site vpn service

Step 3: If the card number is valid, our segmentation model stored inside our application will run and OCR services will be called

Step 4: After information extracted are confirmed to be valid, our web application will send a request back to the mall's server for redemption

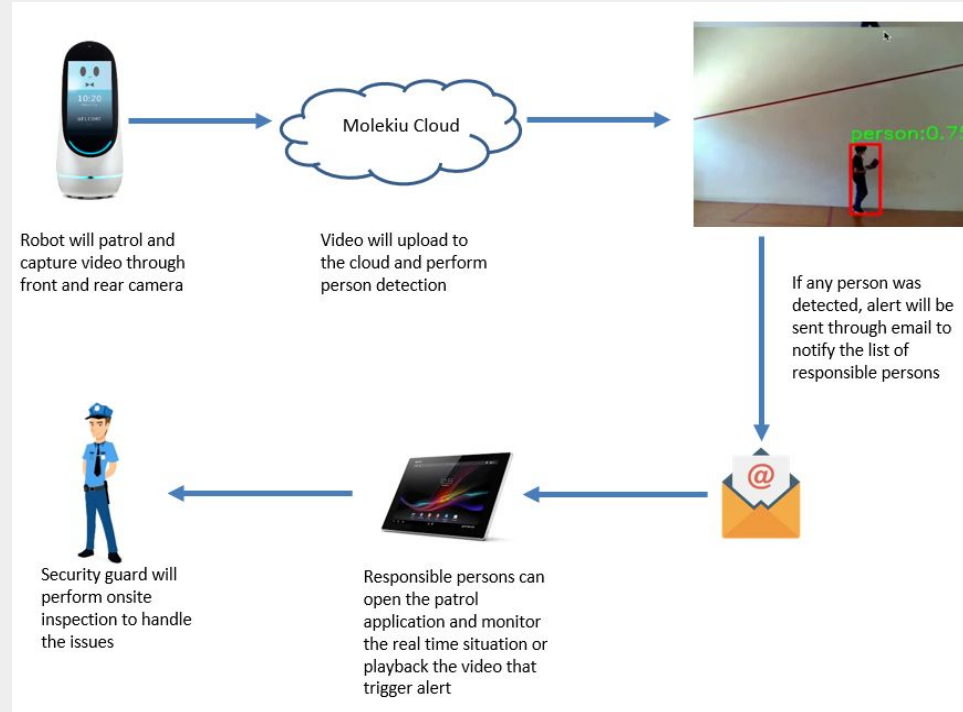
Robot Patrol & Video Analytics

Step 1: Robot will patrol in the shopping mall every night

Step 2: Robot will establish a peer to peer connection with our server, live streaming 4K videos from front and rear cameras

Step 3: Video will then be passed to our model sitting in our server for analysis

Step 4: Once targets objects are detected in the video, notification emails will be sent to responsible persons



How 5G[📶] Make A Difference

💡 5G enable us to establish stable and faster connections, enhancing the quality of our services.

Car Park Coupons Redemption:



- The key to the success of our proposal is Efficiency and Accuracy.
- Leveraging the 5G network architecture, we are able to transmit data quickly between our robot and our server, which significantly reduces the waiting time on the customers' side.
- If the solution is not fast and accurate enough, customers would rather wait in line at the service counters than completing the process with the robot, which violates our project objectives.

Patrol:



- Since the rear camera is a 4K camera, and the front camera is of 500 Megapixels, the video that they will be live streaming is of a huge size. (14 GB for a one hour 4K video)
- 5G allow us to establish fast and stable P2P connection between the robot and our server, enabling us to deliver a real-time live streaming and analysis solution

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ADVANTAGES

BENEFITS & SPECIAL FEATURES

 **Deploying a Robot Security Guard enable more automation and higher efficiency.**

The Robot is first deployed at the shopping mall to patrol in non business hours at initial stage. It can be used to replace one security guard to perform a eight hour security patrol.

240

manhours can be saved per month

Apart from the manhours saved, the benefits also include:

- The robot can perform autonomous patrolling at a pre-set route and schedule, identify potential issues such as trespassing and alert the control room to take timely action
- The real-time information collected allows the control room to make decision on the most appropriate course of action
- The robot can protect the human security guards from potential hazards through reducing need for physical confrontation
- Consistently High Patrol Quality

Work Efficiency – Customer Service

 Our robot is the first robot in Hong Kong that can perform car park coupons redemption.

- The robot will served as a robot ambassador (providing promotion, guiding, and car park coupons redemption services) 8 hours. Our solution integrates with their business workflows, and hence the minimum effort of integration is required from our clients.



The whole parking coupon redemption takes 2 minutes on average to complete. It can then support a maximum of 240 redempitons per day, reducing the workload of concierge staffs.

Reduced Workload



With Optical Character Recognition, it significantly reduces manual errors during data entry process.

Reduced Errors



Moreover, the co-purchase data stored in the database could also be used to provide business insights in the future.

Data Storage

Enhance Customer Service Quality



The 5G Customer Service robot provides customers a more convenient shopping experience

- The robot **bring services to customers** instead of requiring customers to look for these services
- The robot can provide end to end guiding services instead of verbal guiding advices that most concierge staffs provide
- The robot can actively promote different events to customers
- It provides customer with a self-service mean for carpark coupon redemption with the assistance of robot anywhere and anytime, reducing the waiting time
- It enables a flexible and mobile concierge which can attend to the customers' request.



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PROSPECTS

Implementation in a shopping center at Tuen Mun

 The idea presented in this proposal had its soft launch at a shopping center at Tuen Mun.

- The Robot will go the welcoming-guest point to provide services for customers in the shopping mall. The guiding, promotion services are launched while we aim to launch the car park redemption service as soon as possible.
- The Robot patrol everynight for an hour, and perform person detection in zones where nobody should be allowed to enter. The recorded video will be stored in our cloud.



Prospects on General Public, Industries and 5G Industry

General Public

General Public

The General Public would have more exposure to robots, and enjoyed a better shopping experience



Robotic Industries

Robotic Industries

As 5G becomes more available, there would be more opportunities to develop Robot2Robot communication and multi-purpose robots.



5G Industry

5G Industry

If this project is successful, there would be bigger incentives to implement 5G in large environments such as shopping malls, as it provides a solid way to leverage the network

