LOCOMOBI WORLD

MOBI 2.0

Mobi Automated Parking & Security Robot

INTRODUCTION

Parking has evolved from a manual process requiring attendants for payments and monitoring to a more automated system. However, attendants are still necessary for customer assistance and enforcement. With advancements in robotics and artificial intelligence, as well as decreasing costs, there's now an opportunity for fully automated parking solutions. Locomobi World is introducing Mobi, a robot parking attendant, to further automate, secure, and enhance the efficiency of parking. This innovation also presents new revenue opportunities for lot owners.

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FEATURES

Upgradeability:

The robot is easily upgradable, both in hardware and software, to adapt to changing needs and lessons learned. It must be designed with modularity in mind.

Control Options:

The robot can be controlled through:

- Cloud-based server syncing
- A dedicated mobile app
- A local on-site server
- A handheld remote contro

Adaptability:

Various terrains, like tracked wheels for snow or uneven dirt, and regular wheels for garages will be available.

Environmental Resistance:

Mobi will be sand/dust proof and waterproof for rain

Autonomy:

Mobi operates autonomously, without the need for cloud or local server connections. Onboard video analytics and AI will reduce bandwidth requirements, enabling functionality in areas with limited or no internet access.

Safety Features:

Mobi avoids causing damage to people or property.
It has:

- Pressure sensors on the base for immediate stopping upon contact
- Advanced sensors to prevent collisions MVP
- The ability to detect small objects or curbs on the ground

Security:

- A high-security model capable of withstanding small caliber bullets and vandalism.
- Gyroscopes and accelerometers to detect vandalism or theft attempts, with a 120 dB alarm system that has an independent battery/wiring to prevent tampering MVP
- A hidden, secure GPS system with its own tamper-proof battery for tracking, similar to ATM machines.

Mobility:

Mobi is capable of navigating flat parking lots, including the ability to hail elevators and understand floor. Ability to go up and down ramps will be added.

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FUNCTIONS

Interact with people, and avoid obstacles

PARKING CITATIONS & VIOLATION ALERTS

Gated lots incur higher costs due to equipment like ticket dispensers and gates, and operational expenses such as maintenance and staffing for customer issues. However, they generate increased revenue as payment is required for exit. Ungated lots are less expensive to set up and maintain, but they rely on enforcement, which is typically concentrated during peak times for maximum citations.

Mobi transforms this dynamic by enabling 24/7 enforcement patrols, even with minimal occupancy. It can issue e-citations or summon an enforcement officer when necessary, streamlining the process. The robot, following pre-programmed routes or autonomous patrols, uses automated license plate recognition to identify unauthorized vehicles, mapping them for action.

Options for enforcement with Mobi include:

- Printing tickets and placing them on cars using an arm.
- Automatically sending alerts for unauthorized cars via email, voice, SMS, with enforcement officers printing tickets on-site.
- E-tickets sent by mail.
- The robot can stop at an unauthorized vehicle and call an enforcer.

Additionally, Mobi can monitor specific parking stalls in settings like residential buildings, alerting if an unauthorized vehicle occupies a designated spot.

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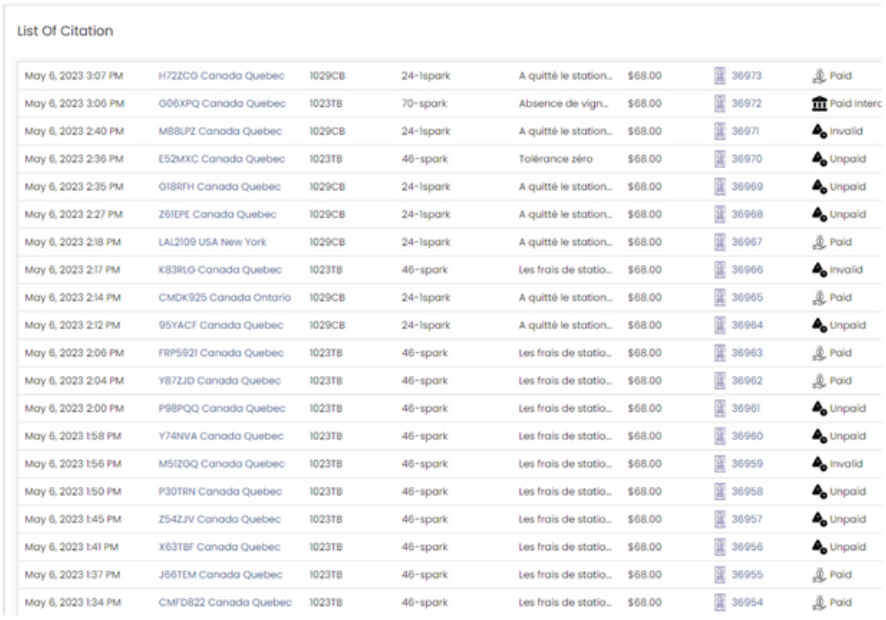
FUNCTIONS

Citation details

1 / 1

Num.Réclamation 36973
Date mai 6, 2023 3:07 PM
Immatriculation H72ZCG Canada QC
NSV JN1BJ1CR8HW101529
Marque Nissan
Modele Qashqai
Couleur Rouge
Agent 1029CB
Adresse 323 rue Jean – Talon Est Montréal, Québec, H2R 2T2

Zone 24 – 1spark
Violation A quitté le stationnement (left the parking lot)
68,00$ si payé dans les 7 jours
83,00$ si payé entre 8 – 30 jours
103,00$ si payé après 30 jours
Note Stationnment strictement réservé a la cl
ientele interieur du Tim Horton
Paiement https://24 – 1spark.enforcement.zone/td/H72 – 36973
Qr Code



List Of Citation

May 6, 2023 3:07 PM	H72ZCG Canada Quebec	1029CB	24-1spark	A quitté le station...	$68.00	36973	Paid
May 6, 2023 3:06 PM	G06XPQ Canada Quebec	1023TB	70-spark	Absence de vign...	$68.00	36972	Paid Interc
May 6, 2023 2:40 PM	M88LPZ Canada Quebec	1029CB	24-1spark	A quitté le station...	$68.00	36971	Invalid
May 6, 2023 2:36 PM	E52MXC Canada Quebec	1023TB	46-spark	Tolérance zéro	$68.00	36970	Unpaid
May 6, 2023 2:35 PM	GI8RFH Canada Quebec	1029CB	24-1spark	A quitté le station...	$68.00	36969	Unpaid
May 6, 2023 2:27 PM	Z61EPE Canada Quebec	1029CB	24-1spark	A quitté le station...	$68.00	36968	Unpaid
May 6, 2023 2:18 PM	LAL2109 USA New York	1029CB	24-1spark	A quitté le station...	$68.00	36967	Paid
May 6, 2023 2:17 PM	K83RLG Canada Quebec	1023TB	46-spark	Les frais de statio...	$68.00	36966	Invalid
May 6, 2023 2:14 PM	CMDK925 Canada Ontario	1029CB	24-1spark	A quitté le station...	$68.00	36965	Paid
May 6, 2023 2:12 PM	95YACF Canada Quebec	1029CB	24-1spark	A quitté le station...	$68.00	36964	Unpaid
May 6, 2023 2:06 PM	FRP5921 Canada Quebec	1023TB	46-spark	Les frais de statio...	$68.00	36963	Paid
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May 6, 2023 2:00 PM	P98PQQ Canada Quebec	1023TB	46-spark	Les frais de statio...	$68.00	36961	Unpaid
May 6, 2023 1:58 PM	Y74NVA Canada Quebec	1023TB	46-spark	Les frais de statio...	$68.00	36960	Unpaid
May 6, 2023 1:56 PM	M51ZGQ Canada Quebec	1023TB	46-spark	Les frais de statio...	$68.00	36959	Invalid
May 6, 2023 1:50 PM	P30TRN Canada Quebec	1023TB	46-spark	Les frais de statio...	$68.00	36958	Unpaid
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May 6, 2023 1:34 PM	CMFD822 Canada Quebec	1023TB	46-spark	Les frais de statio...	$68.00	36954	Paid

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FUNCTIONS

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1. **Vehicle Tracking and Occupancy Monitoring:** The robot can count vehicles in a lot, track occupancy down to individual stalls, and recognize license plates for individual stall identification. This information can be communicated through signs, apps, and other portals.

2. **Parking Duration Monitoring:** The system can monitor how long a car remains in a stall and alert for overstay violations. If a car's license plate isn't visible, other characteristics like make, model, and color are used for identification.

3. **Directing to Appropriate Exits or Elevators:** In complex parking garages, the robot can guide people to the most convenient exit or elevator for their destination within the building.

4. **Providing Directions to Local Landmarks**: The robot can offer directions to nearby landmarks or key locations, either through maps, on-screen guidance, or voice instructions.

5. **Parking Payment Assistance:** The robot can facilitate parking payments, eliminating the need for drivers to visit a pay station.

6. **Safe Walking Escort:** For added security and comfort, the robot can accompany individuals walking to or from their car.

7. **Emergency Services Contact:** The robot can connect users to emergency services like 911 via two-way calling.

8. **Shuttle Bus Assistance:** In large parking areas, the robot can notify shuttle drivers of waiting passengers and provide arrival times and other relevant information.

9. **Intelligent Patrols:** While patrolling, the robot can perform various security and environmental checks, including database checks of known residents, audio monitoring for emergencies, AI video analysis for fire or smoke, and human behavior analysis for potential accidents or crimes.

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FUNCTIONS
FUTURE PHASES

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10 **Sending Emergency Warnings:** The robot can function as a mobile public address system, warning drivers in emergencies using flashing lights and audio messages.

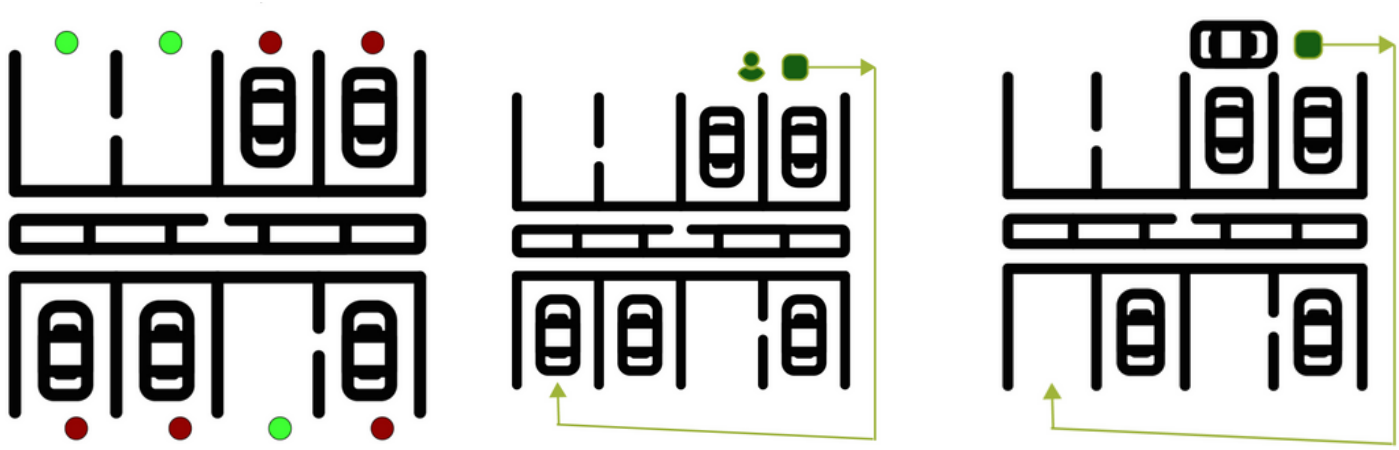
11 **Promotions and Offers:** It can inform parkers about local deals and offers, even printing maps or coupons on demand.

12 **Assistance with Physical Items:** The robot can carry and dispense items like defibrillators, car battery starters, air pumps, and first aid supplies.

13 **Mobile Vending Machine:** It can sell various items like ear protection, blankets, sunglasses, etc.

14 **Ticket Sales:** The robot can function as a mobile ticket machine for various events and services.

15 **Language Translation:** To assist visitors facing language barriers, the robot can offer translation services.



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NAVIGATION & OBSTACLE AVOIDANCE

NAVIGATION:

- The robot navigates effectively in open, covered, and multi-level parking lots.
- It has the capability to hail elevators and, if necessary, interact with street lights for safe city street crossings.
- GPS, Bluetooth beacons, and Lidar are utilized for location tracking. GPS is suitable for open areas, while Bluetooth beacons and Lidar are for covered or indoor spaces. Lidar involves pre-mapping the area, but a challenge is navigating dynamically as cars move in and out of the lot.
- Video analytics support navigation and object avoidance.
- The robot detects low-height objects and uses QR codes or visual cues for orientation and floor identification.

OBSTACLE AVOIDANCE:

- Ensuring the robot avoids collisions with vehicles and pedestrians is crucial.
- Upon detecting a potential collision, the robot will sound a horn and activate flashing lights to alert nearby drivers.
- The robot's design enables quick and agile movements to avoid obstacles.
- Mobi uses multiple sensors for obstacle detection, similar to systems used in vehicles u, which includes cameras, radar, and sensors for blind spots and speeding objects.

DRIVE TRAIN:

- The robot has wheels suitable for most parking areas .
- It can handle small bumps and ramps.
- A tracked version will be developed for more challenging terrains like construction sites.

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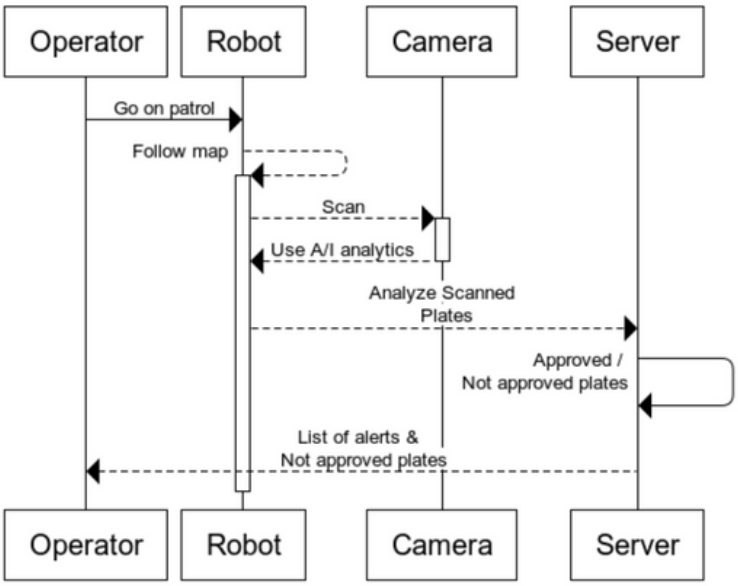
IN ACTION: FUNCTIONS AND MODES OF THE ROBOT

INPUT METHODS:

Mobi is capable of voice and gesture recognition, and can be operated via touchscreen or buttons.

MODES:

Defined Patrols: Follows a pre-defined route on a map.



Example of pre-defined patrol flow

ACTIONS

- Integrates with third-party systems through API for enhanced functionality.
- Records audio and video during patrols.
- Sends alerts via SMS, email, voicemail, and can call police or fire services (initially to a call center).
- Operates gates and doors, like opening doors in high CO2 situations.
- Initiates two-way communication with a remote attendant.
- Sounds a car horn to alert drivers if a vehicle gets too close.
- Uses high-powered light for illumination and potentially disorienting purposes.

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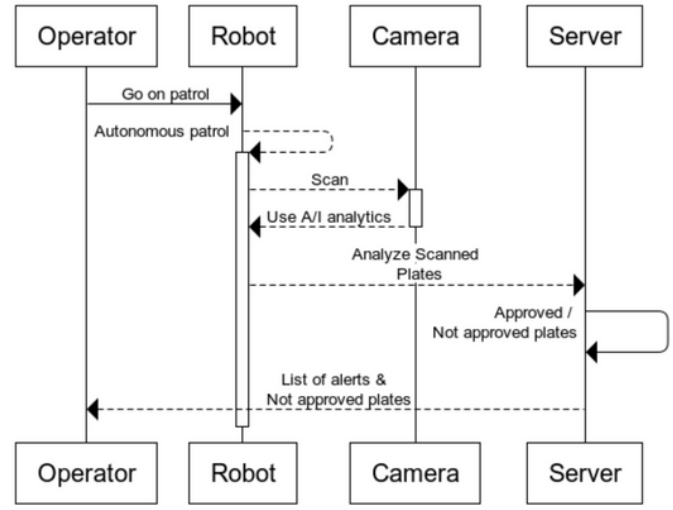
IN ACTION: FUNCTIONS AND MODES OF THE ROBOT

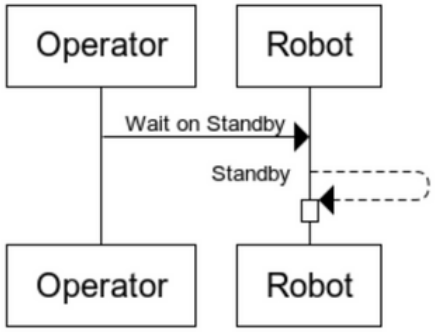
MODES:

Autonomous: Randomly patrols within pre-set boundaries.



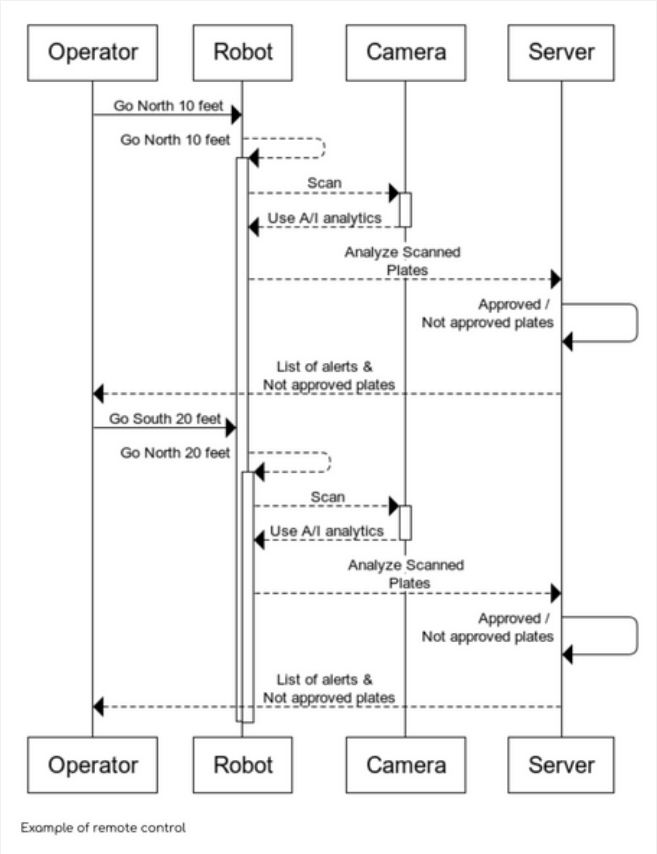
Example of autonomous patrol

On Standby: Remains stationary, possibly charging, until needed.



Example of being on standby

Remote Controlled: Operated remotely over the internet or with a controller.



Example of remote control

Hailed: Can be summoned to a specific location via:

- "Hail" buttons in the garage.
- A dedicated phone number where users can call and provide location details.
- Voice recognition.
- Gestures, like waving arms.

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