Automated Dasher

Design Sprint

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Set the stage

Set the stage for the Design Sprint by framing the problem

Initial PRD

PRD V1 Linked

Understand

Create a shared understanding of the space, problem, and goals

How Might We

Use these digital stickies to capture your ideas. Feel free to rearrange. Colorize. Etc

How might we track the health status of robots?

How might we connect a new online order with a robot to initiate a delivery?

How might we make robots connect to the backend technical team for any issue?

How might we communicate to the delivery robot if there is a need?

How might we create a great robot - customer interaction?

How might we address a technical issue with robot during a delivery?

How might we control the robots remotely?

How might we create a robot that handles different road and weather conditions?

How might we create robots that picks up food from the right restaurant?

How might we make robots deliver food to customers in multi-storey apartments?

How might we create a robot that can handle obstacles?

How might we save the robot from theft?

How might we calculate the service fee & delivery fee for a delivery by robot?

How might we allow robots also to advertise the restaurant?

How might we increase the demand from customers for food delivered by robots?

How might we calculate the operating costs of a delivery using robots?

- How might we teach users to interact with humans?
- How might we teach robots to avoid trouble?
- How might we make robots not scary for dogs?
- How might we keep vermin away from the robots?
- How might we keep robots odor free, even when carrying smelly food?
- How might we make routes more efficient?
- How might we use robots to make people excited about our brand?
- How might we have robots entertain customers at delivery?
- How might we have robots signal distress when something goes wrong?
- How might we give robots a personality?
- How might we share robot progress with consumers?
- How might we teach robots to avoid obstacles?
- How might we move robots to a safe place before stopping?
- How might we make our robots tamperproof?
- How might we change robot's appearance?
- How might we see real-time traffic on the route?
- How might we communicate with humans around the robot?
- How might we monitor robot progress?
- How might we confirm that the robot is at the right address?
- How might we anticipate mechanical failures?

- How might we teach robots manners?
- How might we handle edge case issues that may arise?
- How might we ensure food gets delivered without incident?
- How might we control robots?
- How might we deal with accidents that might occur?
- How might we alert consumers if their delivery is delayed?
- How might we determine when to recharge robot batteries?
- How might we establish preferred routes?
- How might we determine the best area for launching this program?
- How might we allow users to help us with tracking and feedback?
- How might we mitigate accidents between robots and pedestrians?
- How might we train our operations team on monitoring and controlling a robot?
- How might we use existing technologies?
- How might we track each robot?
- How might we collect data about where the robot got stuck?
- How might we get food to people quickly when the robot fails?
- How might we use use greener energy to power our robots?
- How might we leverage existing tools to better track our robots?
- How might we create ML/AI models to help robots learn to get better overtime?
- How might we build redundancy into our system?

How might we detect when a robot needs help?	How might we overcome technical glitches during a delivery?	How might we program robots to address customer returns?	How might we enable "emotion" modes in robots?	How might we Increase robot speed?
How might we streamline communications between operators and robots?	How might we address a sudden power outage?	How might we program robots to address delays in deliveries?	How might we enable robots to interpret and speak different languages?	How might we make inertacting with robots more fun?
How might we allow robots to detect real-time traffic patterns?	How might we prepare robot to handle deliveries to persons with disabilities?	How might we accept tips that some customers may want to give a robot?	How might we enable robots to detect missing items in the order during pickup?	How might we make our robots act like people?
How might we alert operators of need for robot intervention conveniently?	How might we program robots to address order cancellations?	How might we teach empathy to robots?	How might we enable robots enter a crowded restuarant to pickup food?	How might we help robots talk to peope?

Monitoring

How might we ensure food gets delivered without incident?

How might we confirm that the robot is at the right address?

How might we leverage existing tools to better track our robots?

How might we allow users to help us with tracking and feedback?

How might we track the status or progress of robots in action?

How might we create robots that picks up food from the right restaurant?

How might we share robot progress with consumers?

How might we alert consumers if their delivery is delayed?

How might we track each robot?

How might we connect a new online order with a robot to initiate a delivery?

How might we streamline communications between operators and robots?

How might we inform customers if there is an issue with the robot?

How might we create robots to deliver food to the right customer?

How might we monitor robot progress?

[Tracking]

How might we reroute a robot in case of an issue with ongoing route guidance?

How might we create a hassle free route guidance for the robots?

How might we teach robots to avoid obstacles?

How might we establish preferred routes?

How might we see real-time traffic on the route?

How might we make robots to interpret traffic signs and signals?

How might we make routes more efficient?

How might we allow robots to detect real-time traffic patterns?

How might we create a robot that handles different road and weather conditions?

[Route guidance]

Control

How might we Increase robot speed?

How might we communicate to the delivery robot if there is a need?

How might we control the robots remotely?

How might we program robots to address customer returns?

How might we enable robots to detect missing items in the order during pickup?

How might we program robots to address order cancellations?

How might we control robots?

How might we program robots to address delays in deliveries?

How might we make robots to understand if there is a need to wait in a restaurant?

[Control]

Trouble shooting

How might we detect when a robot needs help?

How might we collect data about where the robot got stuck?

How might we anticipate mechanical failures?

How might we address a sudden power outage?

How might we track the health status of robots?

How might we handle edge case issues that may arise?

How might we mitigate accidents between robots and pedestrians?

How might we have robots signal distress when something goes wrong?

How might we deal with accidents that might occur?

How might we determine when to recharge robot batteries?

[Problem identification]

How might we alert operators of need for robot intervention conveniently?

How might we overcome technical glitches during a delivery?

How might we get food to people quickly when the robot fails?

How might we make our robots tamperproof?

How might we address a technical issue with robot during a delivery?

How might we move robots to a safe place before stopping?

How might we make robots connect to the backend technical team for any issue?

[Therapy]

Others

How might we make inertacting with robots more fun?

How might we enable robots to interpret and speak different languages?

How might we teach robots manners?

How might we make our robots act like people?

How might we teach empathy to robots?

How might we have robots entertain customers at delivery?

How might we teach robots to interact with humans?

How might we enable "emotion" modes in robots?

How might we communicate with humans around the robot?

[Human interaction]

How might we use robots to make people excited about our brand?

How might we calculate the service fee & delivery fee for a delivery by robot?

How might we increase the demand from customers for food delivered by robots?

How might we calculate the operating costs of a delivery using robots?

How might we allow robots also to advertise the restaurant?

How might we determine the best area for launching this program?

[Business & marketing]

How might we make robots deliver food to customers in multi-storey apartments?

How might we prepare robot to handle deliveries to persons with disabilities?

[Difficulties]

Others

How might we build redundancy into our system?

How might we use existing technologies?

How might we create ML/AI models to help robots learn to get better overtime?

[Technology]

How might we keep robots odor free, even when carrying smelly food?

How might we keep vermin away from the robots?

How might we give robots a personality?

How might we make robots not scary for dogs?

How might we accept tips that some customers may want to give a robot?

How might we enable robots enter a crowded restuarant to pickup food?

How might we teach robots to avoid trouble?

How might we change robot's appearance?

How might we use use greener energy to power our robots?

[Sophistication]

Sprint Focus

Focus	Monitoring and control
Slide #	Slide 9,10
I selected this theme because	The main expectation of the customer from any food delivery service would be a timely delivery and a real time tracking of their food. **Real time tracking** has to be addressed at both customer side and at operations side to know the status of delivery. Timely delivery is addressed by an intelligent navigation system which considers all real time data like traffic, weather, etc. This is programmed within the robots but in case there is a need for human intervention, operators must be in a position to take **control** of the robots remotely.

Define

With an understanding of the problem space, create focus and align on specific outcomes for the Design Sprint

Future Press Review

Food Delivery Robots Take to the Streets
Publisher: Abdallah Hisham, Business developer, DvCircles

DoorDash has begun using food delivery robots to drop off food orders. DoorDash's robot can carry 22 lbs. of food. While it makes a delivery, the robot's compartment is locked so that no one can steal the food or tamper with it. When the service robot arrives at the destination, DoorDash sends a text message with a link.

The recipient clicks the link to unlock the food delivery robot.The small service robot has cameras embedded all around it, offering the robot a 360-degree view. The robot can even overcome a variety of obstacles to make its deliveries. It can climb curbs by lifting its wheels one by one until it makes its way up onto the sidewalk.

It can also avoid collisions with people and navigate around obstacles. The robot is designed to make short-distance deliveries of small orders, the kinds of jobs that human delivery personnel don't want.

The robots are highly intelligent in deciding an optimal route from a restaurant to the customer and they automatically reroute in case of any issue. They have multiple cameras all around their body and can detect obstacles, traffic signs and signals and behave accordingly. The way it was trained to interact with humans is highly impressive and this would make one to constantly go for a food delivered by robots. As a regular customer of DoorDash, we welcome their approach in incorporating robot technology in their operations, especially for taking care of small delivery segment.

Reference: https://www.automate.org/blogs/food-delivery-robots-take-to-the-streets

[Future Tweet]

Small service robots now show up to restaurants, get loaded with food, and then travel to hungry patrons.

Success Metrics

- Set at least two user-centered *goals*
- Identify changes in user behavior will *signal* success in reaching the goal
- Create a *metric* to measure each signal

|	Goals	Signals	Metrics
Happiness	• On time food delivery • Easy to order • Interactive with robot	• Customer reviews and feedback • Using food delivery from Doordash frequently	• User ratings • Increasing in small orders per month
Engagement	• Real time tracking food • Love to make small orders without hesitation	• Active time spent with the app	• Average session length
Adoption	• Shared feedback on platforms • New user orders • Referral friends	• Sign ups	• Referral program rate • Sign up rate
Retention	• Cheaper small deliveries • Promocodes • Gift cards	• More use of promocodes • More use of gift cards	• Increase in small orders per month • Gift card sales
Task Success	• Update customers with live status • Update customers with real time arrival • Customer can choose the robot style	• Real time tracking food • Trying different styles	• Customer feedback • Repeat order rate

Sketch

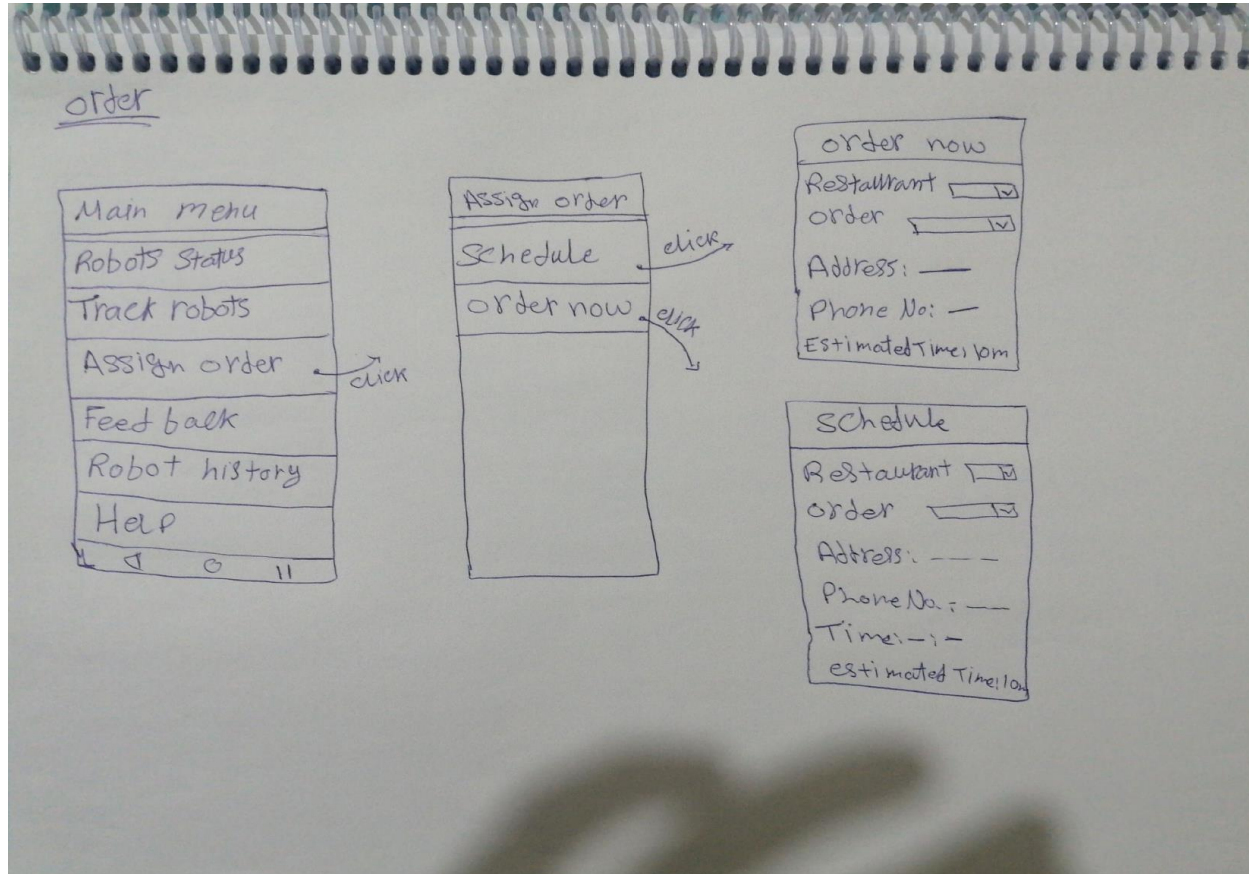Generate tons of ideas, then narrow them down to two in depth solution sketches

8 Sketches

Status Overview
Robot 01 — [On Job] Healthy 90%
Robot 02 — [available] Healthy 100%
Robot 03 — [charging] Healthy 20%
Robot 04 — [warning] Healthy error
Robot 05 — [On Job] Healthy 85%
[Back] [Home]

assign order
Restaurant: [▼]
Robot: [▼]
To: _____ drop on Map
Result
Restaurant ___
Location ___
Robot ___
Status: available
Health: 85%

Schedule order
Restaurant: [▼]
Robot: [▼]
To: _____ drop on Map
Time: _ : _
Result
Restaurant ___
Location ___
Robot ___
Status: on Job (0.3 mile away)
Health: 90%

Feedback
Robot: [▼]
Robot 03
Status: on Job
Health: 60%
Location: [map]
[Track robot]
0.6 mile away

Notifications
Alert: Action needed
Robot 04
issue: Fully charged
[Feedback]

Track Robot
Robot: [▼]
Status: ___
Health: ___
Location: ___
[map]

Re route Robot
Robot: [▼]
estimated Time: 00:10
Location: ___
[Change route]
[Back to restaur.]
[Cancel order]

Robot history
Robot [▼]
order #1
res: ___
Location: ___
Time: 01:30 — 01:40
order #2
res: ___
Location: ___
Time: _ : _ — _ : _

Solution Sketch 1
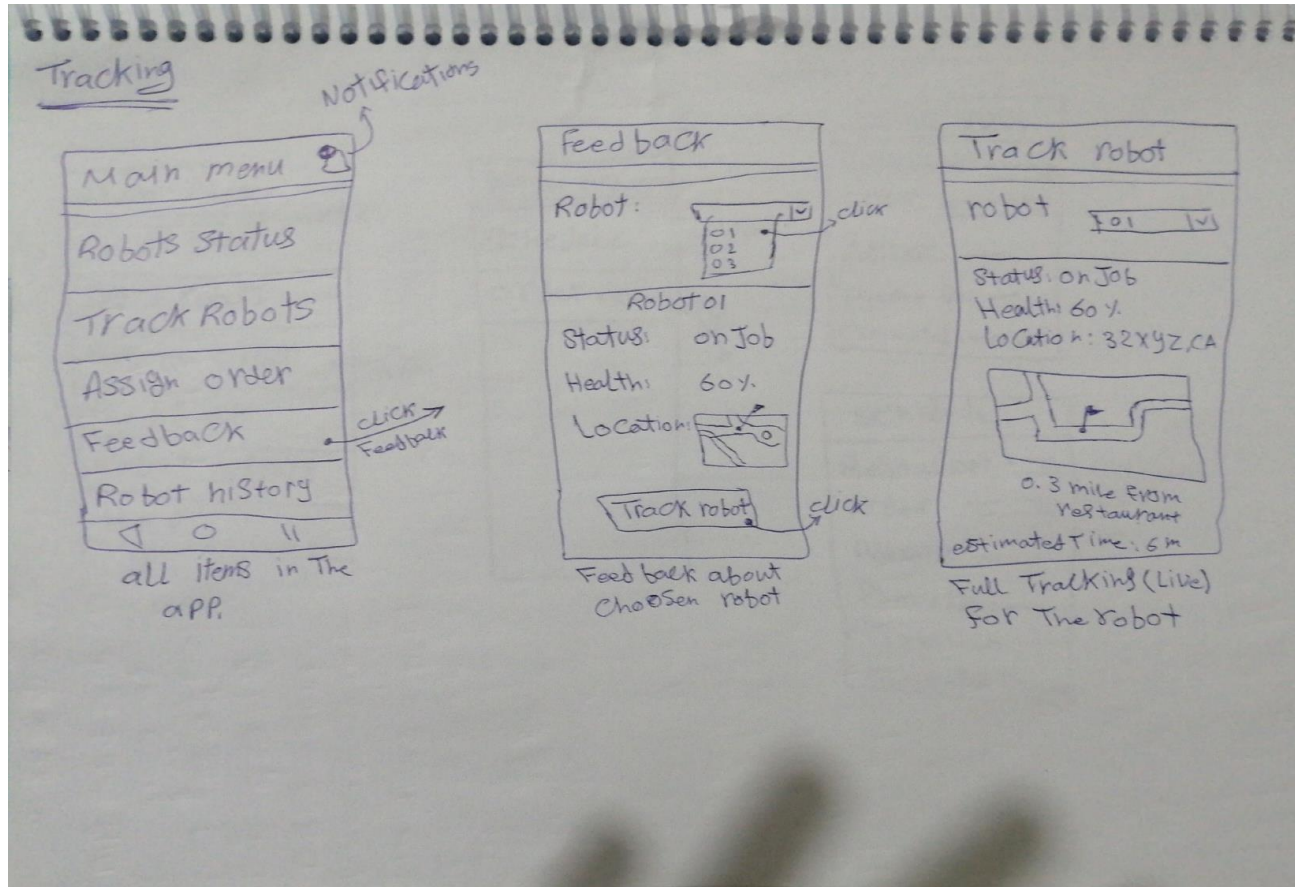
Solution Sketch 2

Decide

Pick the final concept that you develop into a prototype

Decision

Decision	Tracking
Rationale	Out of Solution sketches 'Order' and 'Tracking': 'Order' is more to assign a new job to a robot (using an order placed by the customer). This can also be done manually for now without the use of app and this feature can be focused later once "Tracking" is completed. On the other hand, 'Tracking' : Tracking a robot becomes extremely important for operations if it has to start using the robots as dashers for its delivery. To immediately introduce these robots into the market, it becomes necessary to track the statuses of robots and take control when necessary.

Prototype

Turn your concept into a realistic, interactive prototype that you will use to validate your assumptions and ideas

Storyboard 1

SCRIPT

Ahmed is an engineer who is always order food in break time, but because of shortage of time he can't get food only from the nearest restaurant.

ACTION

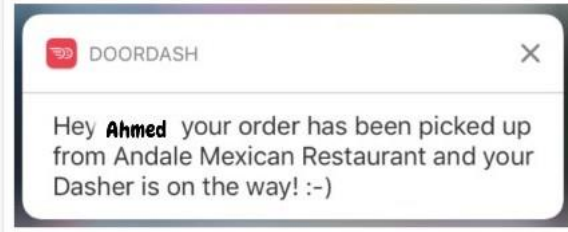He hate to order food because of the not in time delivery.

1

SCRIPT

He listened about Automated Dashers and he wanted to try it with his favorited restaurant Which is 3 mile away.

ACTION

He opened the app and make the order and choose the type of robot he like.

2

DOORDASH ✕

Hey **Ahmed** your order has been picked up from Andale Mexican Restaurant and your Dasher is on the way! :-)

SCRIPT

Ahmed after 2 min, Received a notification that his order picked up with the automated dasher, and when he pressed this notification he opens the tracking map and estimated time to arrive.

ACTION

He surprised and very enthusiast for the first meeting with the robot.

3

Storyboard 2

SCRIPT 4

But ! When the robot in his way to ahmed, was attacked by a thief, and then the robot self locked more and send a notification to the support.

ACTION

the robot self locked and open the horn and the thief escaped.

SCRIPT 5

The technical support open the camera built in robot, and found it safe.

ACTION

they closed the horn, and rerouting the robot for the customer.

SCRIPT 6

Customer support called Ahmed for the short delay.

ACTION

Ahmed welcomed it.

Storyboard 3

SCRIPT   7

Ahmed after the estimated time, he received a notification to get the order.

ACTION

he go with the mobile to open the robot.

SCRIPT   8

Ahmed gets his food out of robot's trunk. Robot talks to Ahmed thanking him for ordering with Doordash and she is delight to serve food for ahmed, Ahmed felt happy and wondered how easy, comfortable and fast is now to order small meal and decides to go with this smarty robot from next time, Once the robot closes his lid again he marked the order as 'completed' and changes its status to 'available', Now this robot is ready to take any further order

ACTION

Enter text here...

SCRIPT   9

Ahmed Received a call for a feedback from customer service

ACTION

Ahmed loves the service.

Prototype

Description ● High level overview of the prototype ● What does it do?	The prototype shows an overview of functionalities that an operator can use to monitor and control the robot dasher. This app is meant for the operator at the back end operations/technical team. It mainly focuses on the tracking capability of robot which is the main solution sketch chosen. However it gives an overview : right from the login page to give a complete flow.
Assumptions ● Any assumptions within the prototype	• Meant only for back end operator / technical team usage and not for the customers. • Non functional operations in the prototype are diverted to a placeholder screen. • Few functions like 'Favorites', calendar, thumbs up, search icon in the footer and share icon, community link and support link are non functional in this prototype as this is not the focus of this prototype.
Tasks ● What are the tasks that a user can complete in the prototype?	● Operator can check the current status of the robot: where is it currently located, what is the status, time of arrival at destination, etc. ● He can also initiate some robot control functions like reroute, manual assistance, etc. But the flow is not complete as this is not in the focus of the prototype ● He can initiate a new job or schedule assignment to a robot or search for an appropriate robot and assign a new job ● He can read and clear the feedback of robots

Prototype V1

Validate

Users will go through your prototype and provide feedback on your concept. This is also an opportunity to have an engineering feasibility discussion

Plan and recruit for research

research plan

User Testing

Key Findings from Participant 1

What worked well	*Options that he sees in the app are easily comprehensible and he could navigate freely Appreciates the features interface*
Where participants got stuck	*As he is an engineer so he got stuck in finding all needed features like live chat with customer for direct help without needed to call the operator, and to add more graphics for the application which walk through applications in today's.*
Other observations	*His first impression was great, he like robots to be in our life and help us so he was very excited*

User Testing

Key Findings from Participant 2

What worked well	*Interface is easy and simple* *All features in.*
Where participants got stuck	*He got stack in finding the estimated time for delivery so he liked to merge 'Tracking robots' with 'Robots status' as an improvements, but in a big view he liked the interface*
Other observations	*He needed the app to be more interactive with the customer as It's a modern way to use robots for delivery so we need to add more features that satisfy the customers and make them feel the technology*

Improvements

Improvement #1	Add Live Chat
Rationale	To be more easy for customers contact with operators for a problem or any inquiry
Improvement #2	Merge Tracking Robot with Robot status
Rationale	To be more easy to use and to prevent getting stuck in both of them

Improvements

Improvement #3	Add all Robots ID in Choose Box not to write it
Rationale	To be more easy for operators to reach the robot directly
Improvement #4	More graphics in the robot
Rationale	To be more interactive and modern as all applications nowadays

Iterate (Optional)

Leverage learnings from your first two user interviews to make changes to your prototype. Then run another round of user interviews.

Completing this section is not required. However, it's a good opportunity to validate that your improvements addressed the feedback you identified.

Prototype v2

Description
- High level overview of the prototype
- What does it do?

The prototype shows an overview of functionalities that an operator can use to monitor and control the robot dasher. This app is meant for the operator at the back end operations/technical team. It mainly focuses on the tracking capability of robot which is the main solution sketch chosen. However it gives an overview : right from the login page to give a complete flow with some improvements dependent on customers feedback.

Assumptions
- Any assumptions within the prototype

All suggested improvements from customers were added to this new prototype regarding to the priority of the feature

Tasks
- What are the tasks that a user can complete in the prototype?

- Live Chat between customer and operator.
- Operator can check the current status of the robot: where is it currently located, what is the status, time of arrival at destination, etc.
- He can also initiate some robot control functions like reroute, manual assistance, etc. He can initiate a new job or schedule assignment to a robot or search for an appropriate robot and assign a new job
- He can read and clear the feedback of robots
- User can always go to the main menu

[Link your prototype v2](#)

Handoff

Updated PRD

Link your PRD