20CDT23 – Design Thinking

FOOD DELIVERY BY USING ROBOTS (TEAM 7)

TEAM 7

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Phase III : Experiment

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SCAMPER WORKSHEET

s substitute	If the food bot does not work we will make Our rescue team to deliver the ordered food To our respective customers immediately.
c combine	We can combine an automatic food warmer To keep the food at its correct temperature
a adapt	The food bot can adapt to the conditions Such as damaged roads and it can adapt To almost to any weather conditions
m modify	We can add new features such as Unlocking it not only by using nfc scanner But also by typing the code that is given In the order bill to unlock it
p put to other uses	We can use the food bot to deliver not only Food but also it delivers pantry items for The customers who are in the local areas
e eliminate	We can get rid of the voice assistance It is not necessary to have this feature It can be kept as optional
r reverse	It is necessary to change the above ideas According to the conditions in our country

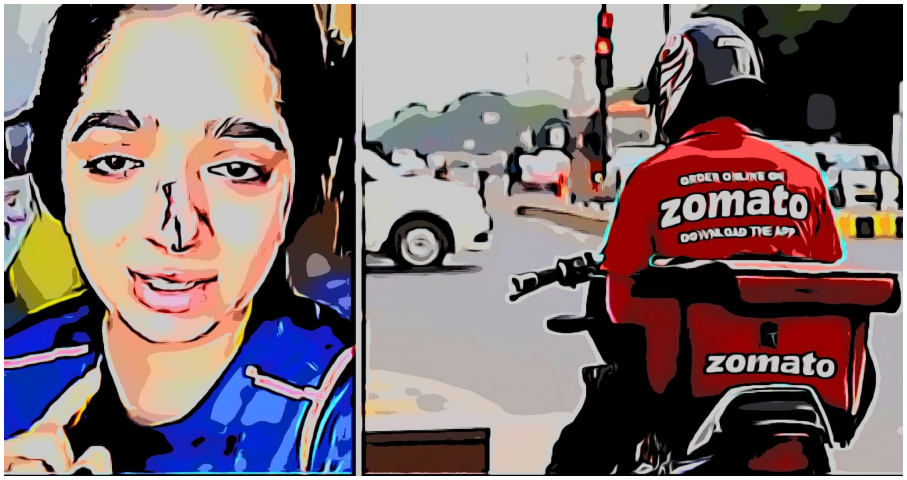
T30: RECONNECTING PERSONAS

BEHAVIOURS	ASPIRATIONS	MOTIVATIONS	CHALLENGES	PAIN POINTS
1. kind hearted person 2. Introverts\ Extrovert	1.To visit all the tourist places/to explore new places. 2. Experimenting and testing new things. 3. To create a whole forest in a dry land.	1. To live a happy life 2. His aim to build a giant hash cracking rigs. 3. He wish to earn one billion dollars	1. What are the problems that you are faced by the delivery person? 2. Did you experience any difficulty in cancelling the order?	1. Not satisfied with the hostel food. 2. Hates to pay tips forcefully. 3. food needs to be in perfect condition.

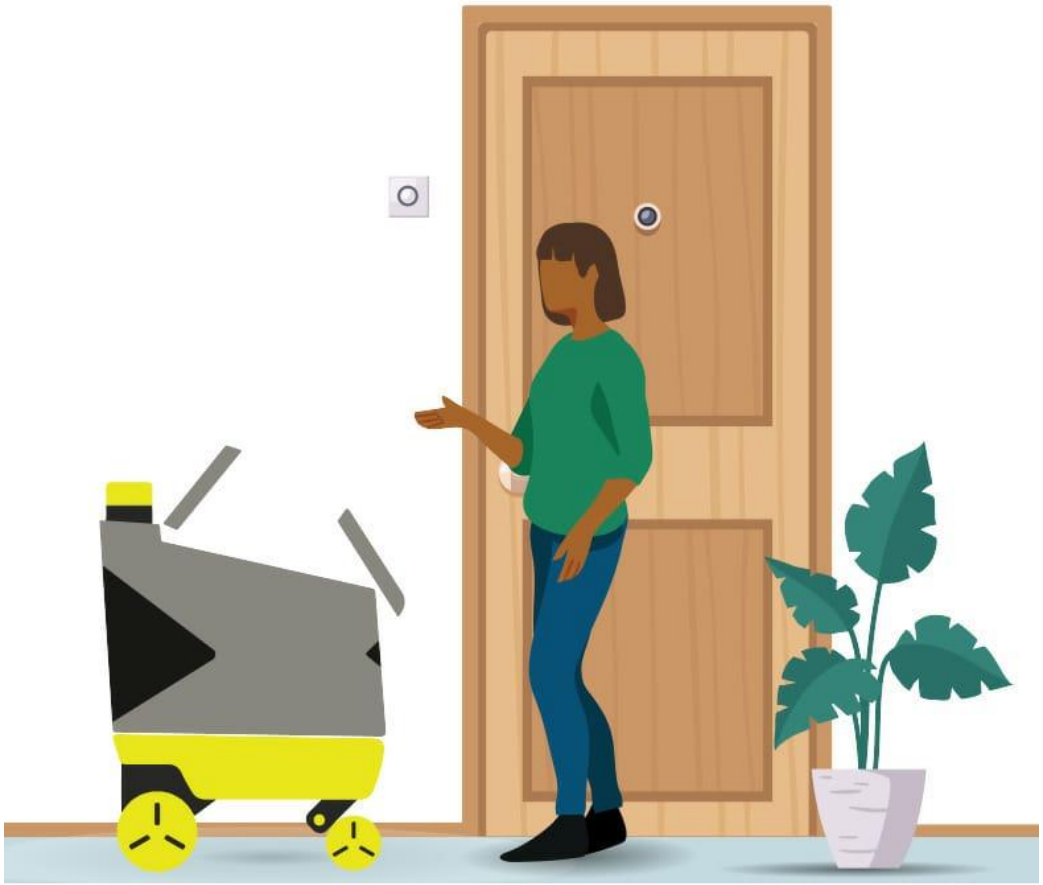
USER INSIGHTS	DEEP USER NEEDS	CONSTRAINTS / DESIGN CRITERIA
1. Needs The Food to be in perfect condition. 2. Needs a way to Open	1. Needs comfortable interaction. 2. Comfortable food delivery. 3. Needs Food security	To develop a robot which will deliver food to the location without human contacy.

Phase IV : Engage

T31 : Storyboard Canvas



T31 : Storyboard Canvas



T32 : Storyboard Canvas for Your Personas

BEGINNING	MIDDLE			END
THE PERSONA	**THE SETTING**	**THE PROBLEMS**	**THE SOLUTIONS**	**THE RESOLUTIONS**
The main characters are the people who order food because of their schedule. (Office workers, students, etc)	When we order food online, sometimes the food is not arrived in good condition and even may have a quarrel with delivery guys.	The problem is that most people didn't have time to come and have their meal. Even after ordering it people face issues like getting into a quarrel with delivery guys	With our delivery robot we can give a contactless delivery, as well as avoid people getting stressed to go to a restaurant for a meal.	The needs of user are met by using a food delivery robot. Which brings food to their location. This may prevent over crowding in the restaurants.

Phase V : Evolve

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CONCEPT ANALYSIS

Design Challenge	How might we use our food bot to deliver Food for our customers	Solution concept	To Deliver Food through Our Food Robots

Persona : SANGAMESH SENGOTTIAN SANTHOSH NIRANCHAN	Pains : It does take some time to deliver the food It cannot maneuver around in the towns according To the road conditions in India.
Deep Needs: •To make our customers to feel secure. •To deliver the food on time •Deliver the food without any damages	Value Propositions to target users : To achieve complete contactless delivery
	User Needs (Problem)Solvers: Hotel Owners
	Gain Creators: Team 7
	Pain Relievers: The that is packed no longer gets damaged and Will be delivered safely
Gains : Deliver the food more safe and secured.	Value propositions to organization/agency: To introduce new type of delivery system in India

T34: STRATEGIC REQUIREMENT TEMPLATE

Strategic Requirements	The Big idea or the idea concept (main solution to be delivered)
Key solution components of the Big idea	Gear motar Bo motar - 4, Arduina Nano, Breadboard, L298N motar, driver, HC - O5 Bluetooth Module, BO motar tyres - 4 , 7.4 volt lipo, batter, L298N motar driver, IMU and GPS board, SHARP IR sensors, Orbecc astra depth camera ,YDLIDAR X4
Capabilities Required to Deliver this solution Component	Knowledge about sensors, Artificial intelligence, machine learning, computer programming for robotics, motion planning.
Current Organizational Assets & capabilities to be Leveraged	With Restaurants, college campus, Universities.
Development Strategy to develop this capability (if needed)	By using hardware and software and getting authorization from the government
Requirements and cost to develop (high/med/low)	Medium Cost - Already in many countries the robots are constructed with high cost. Here we are providing food delivery robot with medium cost
External Sources of Expertise (potential partnership)	Organization, Restaurants, Universities, Colleges, payment partners

T35 : EVOLVING THE PROCESS FOR DELIVERY

KEY SOLUTION COMPONENT	PROCESS/WORKFLOW NEEDED TO IMPLEMENT THE SOLUTION		
	IMAGING THE SURROUNDING (PROCESS 1)	**LOCATION AND NAVIGATION (PROCESS 2)**	**SAFE DELIVEY (PROCESS 3)**
ARTIFICIAL INTELLIGENCE AND INTERNET OF THINGS	By using the Orbec astra series 3d camera, YDLIDAR X4, the platform is 3d imaged and processed. SHARP IR sensors are used to measure distances.	With the help of GPS chipset, the location can be identified. By using Dijkstra's and A* Algorithm, we can find best and efficient path for the robot to travel. WIth IMU can measure current acceleration, angular velocity, etc;	A NFC LOCK is used to keep the lid from opening. An NFC lock uses Radio Frequency Identification (RFID) to provide controlled access. With reprogrammable Keys, we can make the delivery without being stolen.

T36: IMPACT EVALUATION INDICATORS (Viability Analysis)

Criteria	Indicators & Measurements	Stakeholders
Social value Creation	1. This project reduce the strees of people.	1. Travel long distance for having a meal
Stakeholder satisfaction	1. Utilisation rate – We have large user rate who is going to use and get benefit from our project(within the campus).	1. faculty. 2. students
Solution Sustainability	1. Local organisation , legal support and capital funding needed for complete success. 2. Would take time to adapt a new rule but should be done for a big change.	1. College management. 2. Faculty . 3. Alumini.
Solution scalability	1. first, for college students and faculty. 2. second,for all people who ordering food in online.	1. restarunts employes 2. students and Faculty

T37: CHANGE MANAGEMENT PLAN (REVIEW TOOL)

WHAT IS OUR CHANGE MANAGEMENT PLAN?

Vision (Reasons) for change	Staff Engagements	Communicate Vision for change	Implementation plan	Empower people for change	Create Quick wins
The lack of place to have a meal peacefully. To reduce the stress of walking long distance to have a meal.	The restaurant's need to make sure the food is packed and placed safely inside the lid.	Honest review will be collected. And Facial expressions are used to get deep user feelings.	With the robot we can deliver food remotely inside a campus using technologies like IoT and AI.	Users have to be requested not to damage or steal the robot or the things sent to deliver.	Less construction cost, less time period will lead to quick win

T38 : M-A-R-S FRAMEWORK

ABILITY: To deliver the food without human contact.	**ROLE:** By using GPS and 3D imaging to navigate without any issue.	**SYSTEMS:** With the microprocessor as core. Using WIFI to exchange data.
It's about using the 3D camera like ORBEC ASTRA and YDLIDAR	ORBEC ASTRA and YDLIDAR can be used to map the surrounding. With IMU/GPS we can find the location, velocity,etc	Control system is categorised into 1. MPU 2. Power supply 3. WIFI communication 4. Navigation 5. programmable NFC lock.
THINK	Initially thought of using the GPS and IR.	Using A* algorithm, we can find the best path for robot to travel.
FEEL	Has felt the need for user to give their rating and review.	Need to find a way to analyse the facial expression to improve the quality of service.
DO	To Normalize the usage of robots and avoid getting damages/ stolen by people	We just need to aware people about it functions clearly to make it normalize

T39 : IDENTIFYING QUICK WIN

What is this quick win (1) about?	Less construction cost, less time period will lead to quick win
What are the success indicator(s)? How would (these) be measured?	Nowadays people get suffered by the delivery boys.It can be overcome by food delivery robots. There may be an 80% chance for success criteria.. Remaining 20% is due to the lack of well constructed roads.
What are the resources/staff training needed?	Gear motar Bo motar - 4 Arduina Nano Breadboard L298N motar driver HC - 05 Bluetooth Module BO motar tyres - 4 7.4 volt lipo batter L298N motar driver
Who will lead the quick win implementation?	Mohammed Ajmal will win the quick win implementation..
What are the key steps needed to implement this Quick win? What is the timeline till completion?	Software needs to be developed to implement the quick win... It may take 1 month to complete the prototype
When will be the status or progress update?	22/7/22 will.. Ques
When will this be completed?	10/8/22 wil.. Ques
How would the success be communicated?	By advertising and creating awareness of our product

T40 : ACTION PLANNING TO ADVANCE THE DESIGN CHALLENGE PROJECT

Idea What idea for implementation	Objectives Why is this ideas important? Values and benefits.	Responsibility Who will lead this?	Implementation How will this be implemented?	Resources What capabilities and resources needed?	Completion When will this be completed?
• To avoid the problems by the delivery boys • To the safe delivery of food items	**At first this will be implemented in college and universities because of the insubtanial roads.**	Mohammed Ajmal will win the quick win implementation.	Nowadays people get suffered by the delivery boys.And The food is not delivered properly .It can be overcome by food delivery robot.	Gear motar Bo motar - 4 Arduina Nano Breadboard L298N motar driver HC - 05 Bluetooth Module BO motar tyres - 4 7.4 volt lipo batter L298N motar driver IMU and GPS board SHARP IR sensors Orbecc astra depth camera YDLIDAR X4	This will be completed in 10/8/22