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Sponsorship Proposal

T.I.F.A. Robot Waiters



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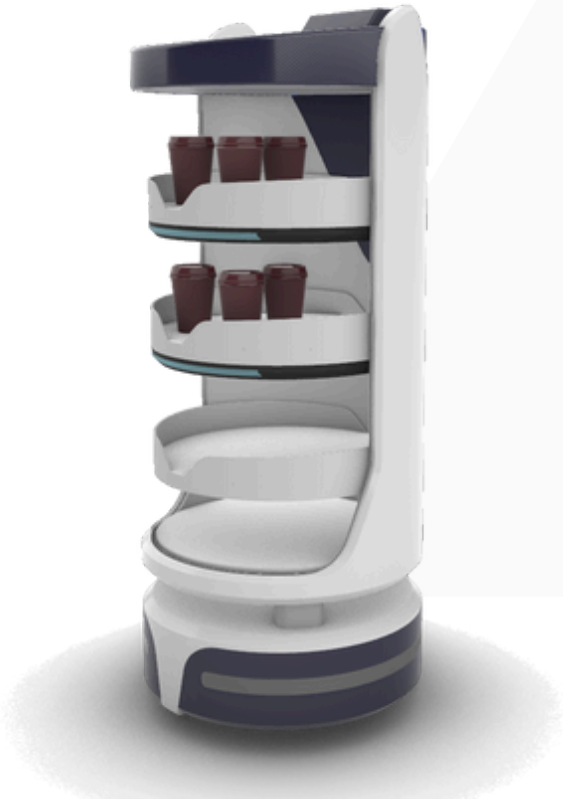


CHAPTER 1

INTRODUCTION

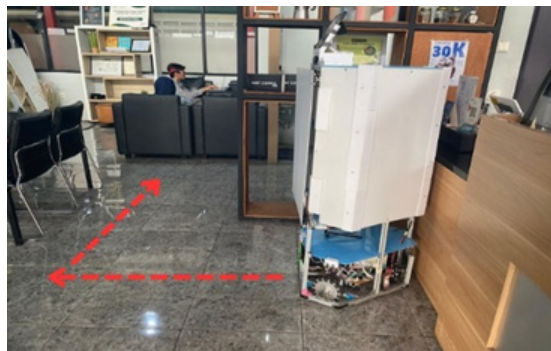


Robot Waiters for Better Experience



Robot waiters are advanced robotic systems designed to streamline and enhance human tasks within operational service environments. These robots are specifically engineered to efficiently deliver food and beverage orders directly to designated tables, ensuring accurate and timely service. By automating these tasks, robot waiters not only alleviate the workload of human staff but also improve overall service efficiency, contributing to a more seamless and enjoyable dining experience for customers.

The key features to be developed in these robot waiters are SLAM (Simultaneous Localization and Mapping) and auto charging. SLAM is a crucial technology that allows the robot waiters to create a map of their surroundings and determine their position in real-time. In the context of robot waiters, SLAM plays a vital role in ensuring efficient navigation and operation, enabling the robots to move seamlessly through their environment while accurately delivering orders to the correct tables.



Positive Impact for Customer



The use of robot waiters draws significant attention and interest, especially among technology enthusiasts and children. The presence of these robots can increase customer numbers by 20-30%, with the majority of customers being families. Robot waiters offer a unique and distinctive experience to customers, such as interactive services involving the robots, which has the potential to enhance customer loyalty and encourage them to recommend the venue to others.



In terms of operational service, robot waiters can assist staff across various industries, including restaurants, cafes, hotels, supermarkets, hospitals, and warehouses. These robots are capable of handling tasks such as carrying heavy or liquid dishes. The use of robot waiters can support approximately 70% of operational service tasks, significantly easing the workload for human staff and enhancing overall efficiency.

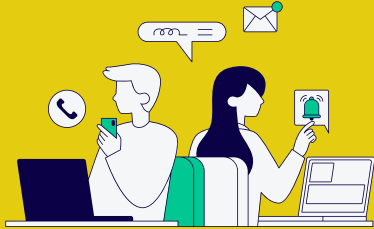


The use of robot waiters can have a significant impact on Return on Investment (ROI). The increase in sales volume directly influences ROI by boosting the revenue generated from the initial investment. This enhanced financial return underscores the value of integrating robot waiters into service operations, as it not only streamlines processes but also contributes to greater profitability.



■ Usefulness

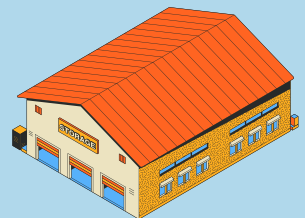
Student Intern



The development of robot waiters presents significant opportunities for students to participate in valuable internships. By being involved in this project, students can gain hands-on experience in fields such as robotics, information technology, and product design, all of which are highly relevant to current industry trends. Moreover, internships in the development of robot waiters allow students to apply the theoretical knowledge they have acquired in the classroom to real-world situations, thereby strengthening their technical and managerial skills.

The development of robot waiters holds vast potential for application across various industries, including hotels, restaurants, cafes, supermarkets, hospitals, and warehouses. The implementation of these robots must be tailored to meet the specific needs of each industry, ensuring that the robot waiters provide maximum benefits and enhance productivity in every sector they serve. By customizing their functionalities to align with industry requirements, robot waiters can significantly improve operational efficiency and contribute to overall business success.

Implementation



Cooperation



The development of this product can serve as a platform for collaboration between students, faculty, and manufacturing labs, thereby supporting the development of human resources that are well-prepared to compete in the job market. By fostering such partnerships, the project not only enhances practical skills and knowledge but also creates a dynamic learning environment where participants can engage in real-world problem-solving, ultimately contributing to the growth of highly skilled professionals.

■ Implementation

The development and use of robot waiters have started to be implemented in several cafes in Indonesia. This implementation offers several advantages, such as increasing customer enthusiasm and improving operational efficiency. By providing interactive and innovative services, robot waiters positively impact various aspects, from speeding up service processes to creating a unique and engaging experience for customers.

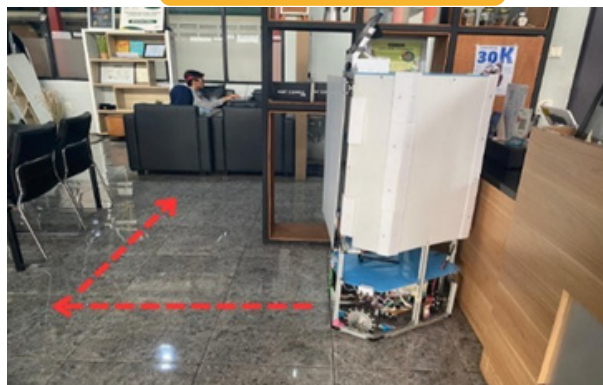
However, even though robot waiters are designed to operate automatically and efficiently, it is important to recognize that there are risks of operational errors. Technical issues, such as system failures, can disrupt service quality, which may ultimately lead to a decrease in customer satisfaction.

One ongoing development in robot waiters is Tel-U Serve, which aims to support operational services at Tel-U Coffee. Tel-U Serve is designed not only to assist with service operations but also to introduce technological innovations to customers. With the introduction of Tel-U Serve, it is hoped that this program can become a pioneer in technology implementation in Indonesia, while also strengthening Telkom University's position as an institution committed to innovation and advanced technology development.

**Bella bot, Reveuse,
Bandung, Indonesia**



Tel-U Serve, Tel-U Coffee



**Bella bot, Sleman
City Hall, Indonesia**



■ Milestone

The use of robot waiters in hospitals can make a significant contribution to improving operational efficiency and effectiveness by handling various non-medical tasks. These robots can be implemented to deliver meals to patients, ensuring that each patient receives their food according to their schedule and dietary needs without adding to the workload of the staff. Additionally, robot waiters can deliver medications to patient rooms, reducing the time required for distribution and minimizing the risk of errors in medication delivery.

The use of robot waiters in supermarkets serves slightly different purposes compared to other industries. Here, robot waiters not only function as item deliverers but also play a crucial role in product promotion. They can engage with customers, provide information about various products, and highlight special offers or new arrivals, thereby enhancing the shopping experience and boosting sales.

The use of robot waiters in warehouses plays a crucial role in supporting operational efficiency, particularly in the processes of item retrieval and return. These robots can be optimized to navigate large warehouse areas with precision, retrieve items from storage shelves, and deliver them to designated locations, whether for packing, shipping, or restocking. This capability enhances workflow efficiency and accuracy in warehouse operations.





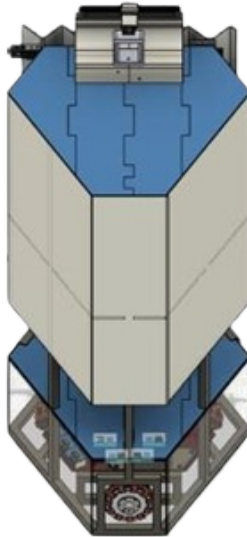
CHAPTER 2

PRODUCT

DEVELOPMENT



■ Previous Product Features



In the previous robot product, several key features were implemented, such as manual mapping, obstacle avoidance, an adjustable tray, a maximum load capacity of 6kg, and a sliding door. Although these features provide a solid foundation for the robot's functionality, the product still faces challenges in terms of accuracy, which only reached 38%. This indicates that while the robot's functionality is already diverse, improvements in product features are needed to enhance the robot's accuracy and overall functionality.

Features



Manual mapping



Obstacle Avoidance



User Interface



Adjustable Tray



Up to 6kg Load per Tray



Sliding Door

■ Product Design



The selected solution design utilizes an LCD screen placed at the back of the robot, reducing the risk of damage as it is less likely to be impacted while the robot moves through busy areas. To further enhance the robot's performance, the design integrates more advanced sensors to optimize real-time data processing, improving both obstacle avoidance and mapping accuracy. The implementation of the SLAM (Simultaneous Localization and Mapping) algorithm allows the robot to navigate with greater precision.

In addition, modifications are made to the robot's design with the inclusion of several features that support performance enhancement, such as smart charge, which allows the robot to charge automatically, extending operational time, and the implementation of auto mapping, which enables the robot to map areas automatically without human involvement. This solution design is expected to provide significant improvements in the robot's accuracy, efficiency, and reliability, allowing it to better meet operational needs in a more optimal manner.

Features



Auto mapping



Smart Charge



Obstacle Avoidance



Interest User Interface



Long Service Time



Adjustable Tray



Up to 10kg Load per Tray



Sliding Door

Target Market

MARKET POTENTION



±29.005 Hotel



±10.900 Resto dan Cafe



±3.155 Rumah sakit



±1.411 Supermarket



±32.193 Warehouse

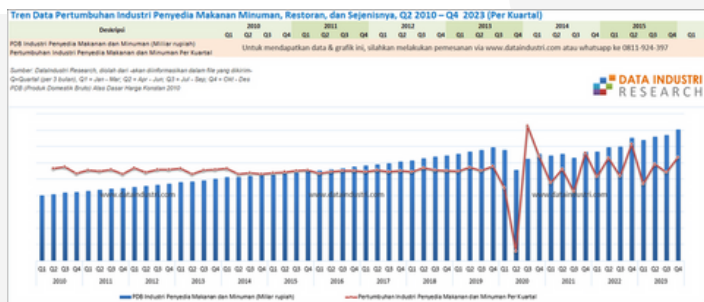


Target Market Prioritas



Target Market Setelah Development

The target market for the development of robot waiters is extensive, covering various sectors such as hotels, restaurants, cafes, hospitals, supermarkets, and warehouses. However, the primary focus of the current development of robot waiters is on the Horeka segment (Hotels, Restaurants, and Cafes). By prioritizing Horeka as the target market, it is hoped that robot waiters will effectively meet the need for efficient and innovative service in this sector.



The chart above illustrates the growth trend in the hotel, restaurant, and cafe sectors in Indonesia from 2010 to 2023. This growth reflects significant opportunities for the industry to continue expanding and innovating, including the adoption of cutting-edge technologies like robot waiters to enhance service quality in these sectors.

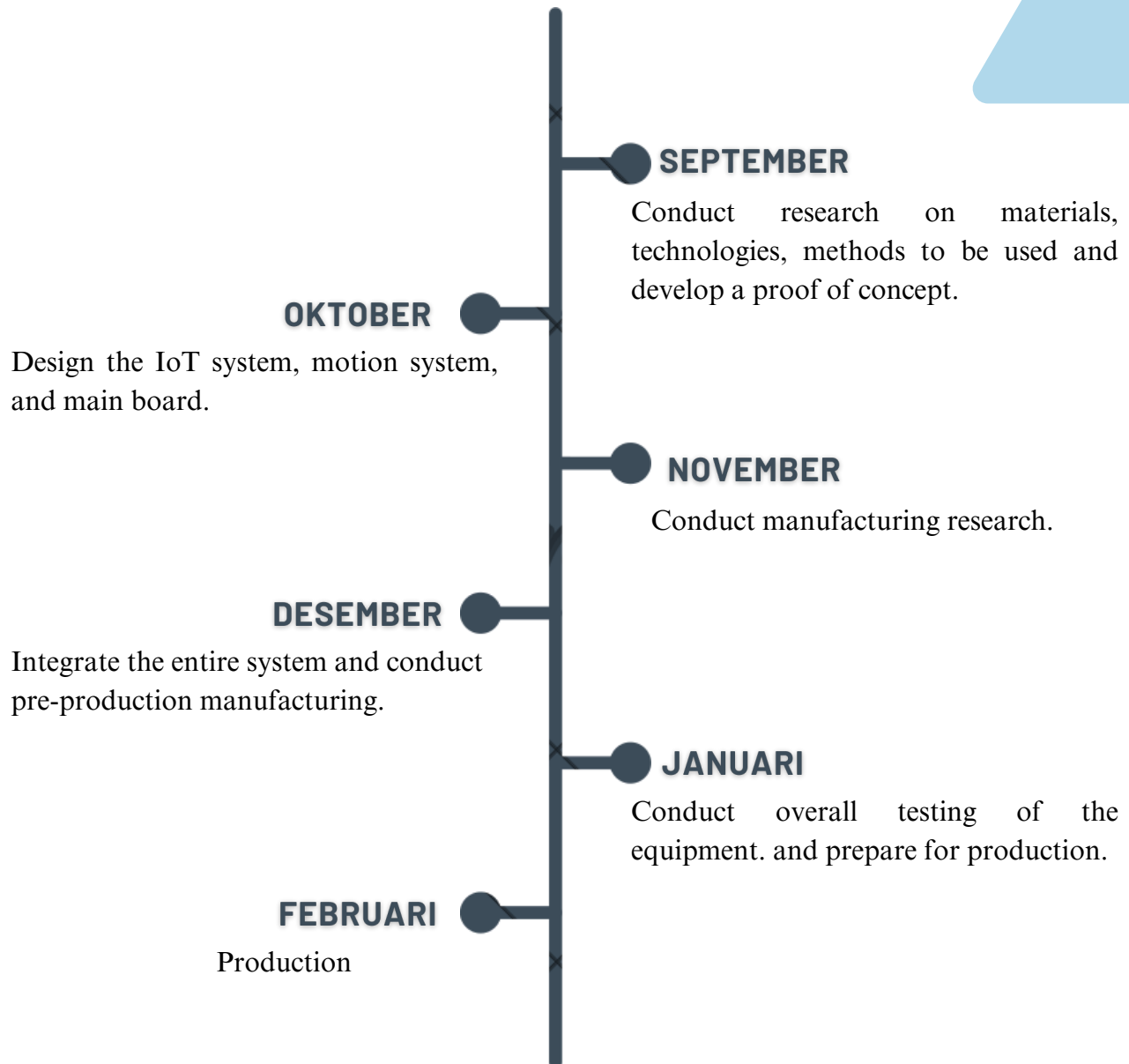


CHAPTER 3

TIMELINE AND PLANNING



Timeline



Team Member

Project Leader

Ir. AT Hanuranto, M.T.

Project Manager

1. Rifqy Fachrizi
2. Nazhifa Azhara

Member

1. Muhammad Fadhlan Al Fattah
2. Fernando Amanda Nikola
3. Muhammad Tsabit
4. Nadya Alifia Chairunnisa
5. Anda Figo Haq
6. Muhammad Jibran Hady
7. Nabila Ardiyani
8. Giovanni Salim
9. Nidya Intani Dwi Saka Putri
10. Agil Agustriana
11. Mohammad Wafi Nabil Karim

■ Budget Estimation Plan

This budget plan is designed to provide a clear and detailed overview of the financial aspects related to the development of the robot waiters. The estimated total expenditure is Rp 130,295,100.00.

Design and Manufacture	Rp49.574.000,00
System and Power Requirements	Rp19.471.100,00
IoT (Internet of Things) Needs	Rp3.100.000,00
Visualization and Mapping Requirements	Rp38.150.000,00
Telkom University Endowment Fund	Rp20.000.000,00

Budget Estimation Plan

No	Nama Barang	Keterangan	Jumlah	Harga Satuan	Harga Total
1	Baterai LiFePo4 24V 25Ah	Baterai	1	Rp5.096.000,00	Rp5.096.000,00
2	Motor DC	Motor	8	Rp1.999.000,00	Rp15.992.000,00
3	Frame Robot	Frame	1	Rp9.812.300,00	Rp9.812.300,00
4	ESP32S3	Mikrokontroler	2	Rp190.400,00	Rp380.800,00
5	Raspberry Pi	Mikrokomputer	2	Rp2.374.050,00	Rp4.748.100,00
6	Teensy 4.1	Mikrokontroler	2	Rp1.000.000,00	Rp2.000.000,00
7	RP LiDAR A2	Sensor	1	Rp7.045.500,00	Rp7.045.500,00
8	Android Display	Interface	1	Rp2.500.000,00	Rp2.500.000,00
9	BTS7960 High Current Module	Motor Driver	10	Rp55.000,00	Rp550.000,00
10	ESP32S3 Xiao	Modul Wifi	2	Rp250.000,00	Rp500.000,00
11	600p/R Rotary Encoder 5V-24V 2-phases Shaft 6mm	Sensor	4	Rp250.000,00	Rp1.000.000,00
12	Omnidirectional wheel 127mm 152mm 203mm omni wheel 5 inch 6 New	Roda	6	Rp2.400.000	Rp14.400.000
13	MPU6050 Accelerator & Gyroscope	Sensor	2	Rp29.000,00	Rp58.000,00
14	Elektronika Dasar	Elektronika Dasar	1	Rp5.074.400,00	Rp5.074.400,00
15	Manufaktur	Manufaktur	1	Rp41.138.000,00	Rp41.138.000,00
TOTAL					Rp110.295.100,00

■ Why Sponsored Us

● Design and Manufacture

By sponsoring TIFA, the robot waiter, your company will be associated with innovative technology in the field of robotics and automation. This partnership will showcase your brand as a supporter of smart solutions that drive the future of hospitality, enhancing your image as a forward-thinking and tech-savvy entity.

● Increase Brand Visibility in High-Traffic Venues

TIFA will operate in bustling environments like cafes, restaurants, and canteens, providing extensive exposure to your brand. With customized branding on the robot, your logo and message will reach a diverse audience daily, creating ongoing brand recall.

● Support Sustainable Innovation and Corporate Social Responsibility

TIFA is designed with sustainability and efficiency in mind, offering a long-lasting, easy-to-maintain service that aligns with eco-friendly principles. Sponsoring TIFA not only demonstrates your commitment to innovation but also highlights your dedication to sustainable solutions in technology.

● Expand Your Marketing Reach to an International Audience

Sponsoring TIFA could position your brand as a leader in supporting local advancements in robotics with international potential. This unique selling point could appeal to audiences beyond the local market, associating your brand with Indonesian technological achievements on a global stage.

■ Sponsorship Package

First Sponsor

SILVER

Logo di robot (s)
Logo di website (s)
Logo di banner (s)

Rp10.000.000,00

GOLD

Logo di robot (M)
Logo di website (M)
Logo di banner (M)

Rp18.000.000,00

PLATINUM

Logo di robot (XL)
Logo di website (XL)
Logo di banner (XL)

Rp25.000.000,00

Supplier Sponsor

- 1 Lidar
- 2 Baterai
- 3 Cetak PCB
- 4 Komposit
- 5 Android Display
- 6 CNC

- 7 Motor DC
- 8 Rotary Encoder
- 9 Raspberry Pi
- 10 Teensy
- 11 ESP32

Logo Design



- Platinum
- Gold
- Silver
- Supplier





CHAPTER 4

CLOSING





Closing

Thus, we present this business proposal as a foundation for the development and implementation of the robot waiters product plan. We believe that with the support and collaboration of various parties, this robot waiters project can achieve its goals, not only in terms of technological innovation but also in making a tangible contribution to Indonesia's progress. Through the integration of advanced sensors and technology, as well as an attractive design, we are confident that these robot waiters will provide significant benefits in line with ongoing technological advancements.

Validity Sheet

Project Leader
Telkom University



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Project Manager
Telkom University



Rifqy Fachrizi

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