

APPLICATION OF PREGNANT MOM'S DIET BASED ON RASPBERRY PI USING TELEGRAM CHATBOT

Yuli Wahyuni¹, Fariz Ammar², Irma Anggraeni³

Universitas Pakuan^{1 2 3}

yuli_wahyuni@unpak.ac.id

Received : 28 August 2022, Revised: 29 September 2022, Accepted : 29 September 2022

**Corresponding Author*

ABSTRACT

A healthy and regular diet is needed to maintain the body's immunity, the benefits that can be used for mothers and fetuses to help in the growth and development of the fetus in the mother's womb so that the eating patterns that are consumed must have good quality and nutrition, because good diet can increase the development of the fetus while in the womb, so it is necessary to make an application with the aim of providing information on a dietary pattern of raspberry-based pregnant women using the telegram chatbot. In this study using the Software Development Life Cycle (SDLC) method where this method has a plan in the form of planning, analysis (analysis), design (design), implementation (implements) and management (maintenance). The results of this study use the telegram chatbot as a medium of information that can be delivered easily because the working principle of the chatbot on the telegram has a button feature that makes it easier for user friendly-based use so as to reduce the system error. Users will get results in the form of a PDF document (information on diet, nutritional content, and examples of foods that can be consumed) or images of good solutions and nutrition so that they can be downloaded easily through mobile phones with a minimum specification in the form of Android and Notebook and Personal Computer (PC).

Keywords : *Diet, Pregnant Women, Health, Chat Bot, Raspberry Pi*

1. Introduction

For a mother, of course the pregnancy is a gift given by God to its people, and is a special situation for women as prospective mothers. The baby who is in the content is a successor to give happiness to parents, when he was born a child to the world. Because in the process of pregnancy there will be physical changes, it can affect the immunity of the body in the mother and to the fetus itself. Therefore a healthy and regular diet is very necessary to maintain the body's immunity, the benefits that are obtained are not only for their mothers but also with their fetuses that can help in the growth and development of the fetus in the mother's womb. Therefore paying attention to the consumed diet must have good quality and nutrition, because a good diet can improve the quality of children in the womb(Kadir, 2021; Mazzocchi et al., 2022).

If a maternal diet is less awake, then the development of the fetus will tilt and this can lead to abortion (abortion), a BBLR (low birth weight), a premature-born baby, and more harmful is the death of the baby in the womb. It does not escape prospective mothers, obstacles that will be experienced such as the length of labor, bleeding, infection and other obstacles can be experienced by the mother, if the diet is less awake. Maintaining good nutrition and diet during pregnancy process is very important for the health of mothers and infants who have not been born. Counseling about a healthy diet and still physically active during pregnancy processes is recommended for pregnant women to stay healthy and prevent excessive weight gain during pregnancy. Healthy diet during pregnancy contains sufficient energy, protein, vitamins and minerals, obtained through consumption of various foods, including green vegetables and orange, meat, fish, nuts, pasteurized milk products, and fruits(Faessen et al., 2022; Heslehurst et al., 2020).

Telegram Bot is a third-party application that can be run inside the telegram, which gives users to send messages, rules, and inline requests(Parlika & Pratama, 2020). The telegram bot can be accessed using HTTPS which is converted into a telegram fire. Bot can be used as a medium of service and providing information about an educational and useful thing for its users in terms of politics, medical, business, social and education. Bot can also be used in a rechargeable activity, and can be used as a monitoring / monitoring tool(Sucipto et al., 2019).

Machine Learning (ML) or machine learning is an approach in the Science of Science (Artificial Intelligence) which is widely used to replace or imitate the role of humans in resolving a problem or work by doing an automatization (Vinuesa & Brunton, 2022). The use of the microcontroller and the circuit is as a media base for taking input, data processing and displaying the results on the web as output viewers in the form of body fat percentages (Iswanto et al., 2022; Chandra & Putro, 2022; Schölkopf, 2022; Henry et al., 2022).

Decision making the selection of nutritional needs of pregnant women. Various than one pregnant woman and the other in herself and fetal food. The nutritional factors of pregnant women are basically the same, but the level of value of nutritional factors varies, so the quality or quality of nutrition is also different (Mohammadi et al., 2022; Hery et al., 2022). From the issue, the selection of nutrition becomes difficult, so nutritional experts need a system that can be petrified to analyze quickly, appropriately, easily, effectively and efficiently in determining the best decisions of various alternative quality choices of nutrients. Testing microcontroller integration to the network and the database is done by programming Microcontroller to be connecting with networks and databases. Which needs to be considered in testing This time is the SSID from the network, the password of the network, the IP address of the server (in this test Localhost), and database. The microcontroller can connect to the network and database if the monitor series The Arduino IDE program shows "connected database!" and "WiFi Connected".

Microcontroller as the process and the Blynk application and database as the output (Rosli et al., 2022). The tool that is made serves to detect the heartbeat and the website system that is created functions as a database-based storage medium. The conclusions obtained from the website system that has been created can assist Posyandu officers in monitoring the patient's heart rate and inputting data into the database (Bakri et al., 2022).

The lack of technology that can quickly determine how pregnant women experience Chronic Energy Deficiency has an impact on increasing the mortality rate in pregnant women and the conceived fetus. Some variables of effectiveness of nutritional intake of pregnant women such as diet, exercise, vitamins C, D, and E are the nutrients needed during pregnancy (Izzati & Mutalazimah, 2022). The advantages of the application of the diet of pregnant women-based raspberry pi using this telegram chatbot, the details of information provided regarding the diet of good pregnant women in the form of information through text, images and vitamins or content that must be consumed in pregnant women. The ease of interacting with the chatbot given to the user in the form of a UI system is perfectly used using the Button system so that the selection on the information needed is easy to access (Ghimire et al., 2022).

Microcontroller as the process and the Blynk application and database as the output. The tool that is made serves to detect the heartbeat and the website system that is created functions as a database-based storage medium. The conclusions obtained from the website system that has been created can assist Posyandu officers in monitoring the patient's heart rate and inputting data into the database (Saha et al., 2022).

The lack of technology that can quickly determine how pregnant women experience Chronic Energy Deficiency has an impact on increasing the mortality rate in pregnant women and the conceived fetus. Some variables of effectiveness of nutritional intake of pregnant women such as diet, exercise, vitamins C, D, and E are the nutrients needed during pregnancy (Izzati & Mutalazimah, 2022).

2. Research Methods

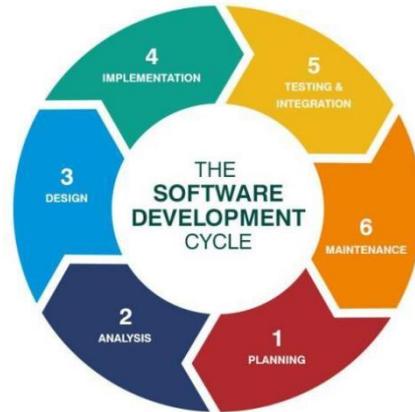


Fig 1. Software Development Life Cycle

Research project planning

At this stage it emphasizes the aspects of the feasibility study of the system development (feasibility study). Build a chatbot that aims to make it easier to provide first trimester pregnancy health information.

System analysis

At this stage, the system will be analyzed how it will be carried out later. The results of the analysis are in the form of advantages and disadvantages of systems, system functions, to renewal that can be applied. This section is included in the planning section of the resource allocation, tool planning, project scheduling, cost estimates, and adoptants.

System Design

At this stage, feature and operation - the operation on the system is described in detail and comprehensive. By analyzing the interaction of objects and functions in the system. Design System has 3 different concepts, namely Mechanic Design, System Design, Design Software and Model Design.

System Implementation

This stage is the application of testing the application, conducting surveys and assessments on the application to be made, whether the application is ready to be made to become a whole or need a deeper development so that the application can run according to the results of the analysis.

Testing and Integration

A stages where the results of the incorporation of units or components in the application that interact in the software and in the trial. Integration testing is done after the testing unit is completed and before the testing system is done. The purpose of Integration Testing is checking whether the application functions according to what is expected, check the performance of the application produced, and test the reliability of the program structure that has been designed.

System Maintenance

Carried out by admin that is obtained to keep the system remain able to operate well through system capabilities in adapting themselves according to their needs. The gap and damage found in the production process must be reported and resolved. If found before mass production, it is better than finishing by remodeling from the beginning.

4. Results and Discussions

The results and manufacture of chatbot using python-telegram-bots is to help easily seek information about pregnancy and good diet for pregnant women. This application even though it is very good at solving the problems of pregnant women, this application is also very good to be learned by husbands in helping provide good nutrition for his wife.



Fig 2. Data Tracking/History

The results of the trial are outlined in the form of a table, where the trial is carried out by checking repeatedly and comprehensively on the application so there is no bug or error in the system, and also in the user's test 4 times, namely pregnant women who have problems in pregnancy in Trimester in the pregnancy period.

Table 1 - Application Testing

No	Step	Things to Expect	Conclusion
1	Start a conversation with a bot	The user can use the Button Start button and start the application	Done
2	Help button	Users can use the help button and get info about the application	Done
3	Disease history and problem questions	The application can display	Done
4	Trimester option	The application can send trimester 1,2,3 pregnancy age elections	Done
5	List of problems on each trimester	The application can send a list of problems after the user has chosen a gestational age	Done
6	Result Information	Information about diet and solutions can be sent in the form of PDFs and text messages	Done
7	User data	Information about users can be displayed	Done

Table 2 - Testing Application To User

User Name	ID User	Trimester			Symptom	Results
		1	2	3		
Lutfiani Tami		✓	-	✓	- Throws up - Vaginal discharge - Abdominal cramps - Fake contraction	Can be displayed
Kitana April	2059916114	✓	✓	-	- Throws up - Pain in the breast - Bleeding	Can be displayed
Fujianti		✓	✓		- Throws up - Abdominal cramps	Can be displayed
Regina Rahma		✓	✓		- Pain in the breast - Bleeding	Can be displayed
Adinda Mita		✓	✓		- Throws up - Vaginal discharge - Abdominal cramps	Can be displayed

5. Conclusion

Application Dietary Pregnant Mothers Based on Raspberry Pi Using Chatbot Telegram This is an application to help provide information about regular diet, providing information about quality nutrients and can help grow fetus and health to the mother itself. By using the telegram chatbot information about it can be delivered easily because the chatbot on the telegram has a button feature that makes it easier in the conversation between the user and the chatbot so it reduces the system error on the bot. Users will get results in the form of a PDF document or an image on good solutions and nutrition that can be downloaded through Gengam cellphones and their personal computers easily.

References

- Bakri, M. A., Paridawati, P., Sikki, I., Handoyo, Y., Sylviana, R., Surahto, A., ... & Apriliansyah, M. (2022). Pembuatan Alat Pengukur Tinggi Badan Otomatis Berbasis Arduino. *Devosi*, 3(1), 29-36.
- Chandra, Y. I., & Putro, A. S. R. (2022). Cargo Simulation Robot Prototype with Bluetooth Based Motor Driver Shield Using Arduino Uno Microcontroller. *International Journal of Artificial Intelligence & Robotics (IJAIR)*, 4(1), 1-8.
- Faessen, J. P., Lucassen, D. A., Buso, M. E., Camps, G., Feskens, E. J., & Brouwer-Brolsma, E. M. (2022). Eating for Two: A Systematic Review of Dutch App Stores for Apps Promoting a Healthy Diet During Pregnancy. *Current Developments in Nutrition*.
- Ghimire, S., Martine, S., & Gerdes, M. (2022, August). Self-imperative Care of Pregnancy using IoT Solutions. In *Scandinavian Conference on Health Informatics* (pp. 64-68).
- Henry, K. E., Kornfield, R., Sridharan, A., Linton, R. C., Groh, C., Wang, T., ... & Saria, S. (2022). Human-machine teaming is key to AI adoption: clinicians' experiences with a deployed machine learning system. *NPJ digital medicine*, 5(1), 1-6.
- Hery, H., Haryani, C. A., Mitra, A. R., & Widjaja, A. E. (2022). The Design of Microcontroller Based Early Warning Fire Detection System for Home Monitoring. *IJNMT (International Journal of New Media Technology)*, 9(1), 6-12.
- Heslehurst, N., Hayes, L., Jones, D., Newham, J., Olajide, J., McLeman, L., ... & Azevedo, L. (2020). The effectiveness of smoking cessation, alcohol reduction, diet and physical activity interventions in changing behaviours during pregnancy: A systematic review of systematic reviews. *PloS one*, 15(5), e0232774.
- Iswanto, I., Akhdan, M., Megantoro, P., & Arfianto, A. Z. (2022, September). Microcontroller based Hospital bed control. In *Proceedings of the U-Go Healthy International Conference, U-Go Healthy 2020, 29 March 2020, Pacitan, East Java, Indonesia*.
- Izzati, R. F., & Mutalazimah, M. (2022, April). Energy, Protein Intake, and Chronic Energy Deficiency in Pregnant Women: A Critical Review. In *International Conference on Health and Well-Being (ICHWB 2021)* (pp. 70-77). Atlantis Press.
- Kadir, S. (2021). Nutritional needs of fish to prevent stunting in early childhood. *Journal of Xi'an Shiyu University, Natural Science Edition*. ISSN.Kadir, S. (2021). Nutritional needs of fish to prevent stunting in early childhood. *Journal of Xi'an Shiyu University, Natural Science Edition*.
- Mazzocchi, A., De Cosmi, V., Milani, G. P., & Agostoni, C. (2022). Health and sustainable nutritional choices from childhood: dietary pattern and social models. *Annals of Nutrition and Metabolism*, 1-7.
- Mohammadi, A., Effati-Daryani, F., Ghelichkhani, F., Zarei, S., & Mirghafourvand, M. (2022). Effective factors on nutrition behaviors of pregnant women based on the beliefs, attitudes, subjective norms, and enabling factors model: A cross-sectional study. *Journal of Education and Health Promotion*, 11.
- Parlika, R., & Pratama, A. (2020, July). The Online Test application uses Telegram Bots Version 1.0. In *Journal of Physics: Conference Series* (Vol. 1569, No. 2, p. 022042). IOP Publishing.

- Rosli, H. A., Malik, N. A., & Ahmad, Y. A. (2022, August). IoT Based Monitoring System for Stingless Bees Colony in IIUM. In *Journal of Physics: Conference Series* (Vol. 2312, No. 1, p. 012088). IOP Publishing.
- Schölkopf, B. (2022). Causality for machine learning. In *Probabilistic and Causal Inference: The Works of Judea Pearl* (pp. 765-804).
- Sucipto, S., Resti, N. C., Andriyanto, T., Karaman, J., & Qamaria, R. S. (2019, November). Transactional database design information system web-based tracer study integrated telegram bot. In *Journal of Physics: Conference Series* (Vol. 1381, No. 1, p. 012008). IOP Publishing.
- Vinuesa, R., & Brunton, S. L. (2022). Enhancing computational fluid dynamics with machine learning. *Nature Computational Science*, 2(6), 358-366.