

## Conference Paper

# Realtime Student Information Center Application Based on Telegram Bot Case Study at the Faculty of Computer Science, UPN “Veteran” East Java

<sup>1</sup> Rizki Parluka \*, <sup>1</sup> Arista Pratama

<sup>1</sup> Department of Informatics System, Faculty of Computer Science, Universitas Pembangunan Nasional “Veteran” Surabaya, East Java

---

### Abstract

The Faculty of Computer Science, East Java Veterans National Development University as a superior Faculty needs to improve the implementation of Information Technology in carrying out daily Tri Dharma activities. Submission of information quickly to all students is certainly a fundamental requirement. With intermediaries delivering messages such as telegrams, we can provide students with various information related to lectures, guidance, student organizations, etc. in real time and automatically. In general, when students ask through the telegram application, these questions will be answered one by one by a human admin, of course this will be very time-consuming and time consuming. What if this can be done by intelligent robots answering questions from all students according to the topic. Lecturers only fill in various information related to academic information such as guardianship, lectures, guidance on street vendors and Thesis on a web-based application, and students who ask via telegram will get their answers automatically. When students ask via telegram, students will choose a question topic before it comes on a specific topic. If the topic does not exist, the algorithm will try to give the answer that comes closest to the question. Furthermore, when students try to ask questions directly without determining the topic, the algorithm will do a match between the questions with the answer database, then give the closest answer. And also the application which we refer to as BITFIK (Bot of Information based on the Faculty of Computer Science) is also able to save and draw conclusions from various suggestions and input from students regarding the services of Lecturers and Education Personnel in the form of questionnaires. The conclusion can then be seen by the Chairperson through a Web Application built with a combination of the PHP Programming Language and its supporting Variants, the MySQL Server Database, and the Telegram Apps Chatting. Continuous coding and integration will continue to be developed in accordance with FIK's Internal Needs during the Application development period. Based on the explanation above can be formulated as follows "How to build a realtime Student Information Center application based on telegram bot case study at the Faculty of Computer Science, UPN “Veteran” Jawa Timur."

**Keywords:** realtime student information center application, telegram bot, Faculty of Computer Science, UPN “Veteran” East Java

---

### Introduction

Delivery of information interactively (Portela and Granell-Canut, 2017) to the general public today is needed (Parlika and Pratama, 2018; Parlika and Pratama A, 2019), especially in the world of campus, especially at the faculty. How to implement an easier way to convey messages to students than through an

---

\* Corresponding author  
Email address: rizkiparluka.if@upnjatim.ac.id

announcement paper posted on the information board. This technology does not replace the manual method but is an additional service that makes it easier (Hiremath *et.al*, 2018) for computer science faculty students to obtain the information they need regarding their lecture activities. Until now, there have been many researchers who use telegram bot to convey campus and institutional scale information (Zubaidi A., and Ramdani 2019; Maulayya *et al.*, 2019), because Telegram Bot Implementation as a learning media is very effective (Ramadhan, 2018; Elango, 2018; Morze *et al.*, 2017).

The background of the issues raised in this study are as follows: High Cost of Software Application development that is able to serve various student questions related to academic services in the FIK environment; Frequently the information is collected first on human officials who have limited time and energy, so information often late in its distribution; A large number of students from all forces must be served; Difficulty in obtaining student dynamics data related to important issues in campus daily life, this causes the Leaders are often late when handling casuistic issues; The difficulty of drawing conclusions from various student suggestions on the performance of Lecturers and Education Personnel.

The formulation of the problem in this research is "How to build a realtime Student Information Center application based on the BOTFIK telegram bot with a case study at the Faculty of Computer Science, UPN Veteran, East Java". Structurally, BOTFIK has the following stages: Determination of Topics - Topics Information that will be given to students; Technical Design will be carried out by Mr. Arista Pratama; The coding and integration will be carried out by Mr. Rizky Parlika; Trial will be conducted in the Semester Academic Year 2018-2019 until Odd Semester Academic Year 2019-2020; Validation will be carried out by the Chairperson and Members; Publication will be carried out by the Chairperson and Members; The Application Release will be carried out by the Chairperson and Members.

The objectives to be achieved in this study are as follows:

*For Departments / Faculties (Satker)*

- Facilitate the Delivery of various information to all students.
- Facilitate access to information for students related to lecturing, tutoring and other academic services.
- Minimizing the costs of delivering information by utilizing existing infrastructure.

*For the University*

- Produce a product that can be made superior in the field of Information Technology, namely the Web-based and
- Telegram Student Information Center Application.
- As a Material of Cooperation with various Agencies and institutions, especially when requiring similar Applications.
- Produce Scientific Publications.

## **Research Method**

This research is divided into several stages as follows:

*Field Survey.*

At this stage a survey was conducted to obtain administrative prerequisite data related to the Topics of Information to be provided to students.

### *Literature Study.*

At this stage documents, references, books, ebooks from the internet, or other sources are needed to design, build, test and validate BOTFIK.

### *Application Analysis and Design*

From the results of the literature study and the results of the field survey will be made a general description of system design, system architecture per user access rights, system requirements analysis both hardware and software, as well as the design of State Transition Diagrams, Use Case Diagrams, ERD Flow, CDM, PDM and interface design of the application to be made, so that the application coding process will be better prepared and directed when implemented.

### *Making Application.*

At this stage it is the most time-consuming step because the models and designs that have been made are comprehensively programmed to build software applications in their entirety and in stages. In the First Year the BotFIK 2019 application will be produced with the following features:

1. Telegram-based Information Services Bot.
2. Admin-side Web Filling (Lecturer, TU).
3. Leaders' Resume Web (Koorprodi to Dean).
4. Telegram based e-Learning

### *Trial and application evaluation.*

At this stage, the application that has been completed will go through several trial scenarios and the trial results will be evaluated to determine whether the Eligible Application is released or needs to be refined again. The method for validating applications is done in 2 stages. The first stage uses the Kappa Cohen Method to test whether the Application flow has been running well, and the second is based on a questionnaire whose results are calculated by SPSS software using the Pearson / R-Table correlation method to obtain Customer Satisfaction (User, Admin, Verifier, and Super Administrator) in running the application, so that it can be used as a basis for a decision that the application is worthy of release.

### *Compilation of Report and Publication Books.*

This stage is the last stage of the research. From Points 1 to 5 above, everything will be documented according to scientific writing rules.

In the First Year Outputs will be produced: 1 International Seminar Proceedings, 1 Unaccredited Scientific Journal, 1 National Accredited Journal, 1 Text / Reference Book, and 1 BOTFIK 2019 Prototype Module.

### *Research Roadmap*

Before presenting the results, we want to show the roadmap for the development of our research, because this is closely related to current and future developments. Our research roadmap can be seen as shown below.

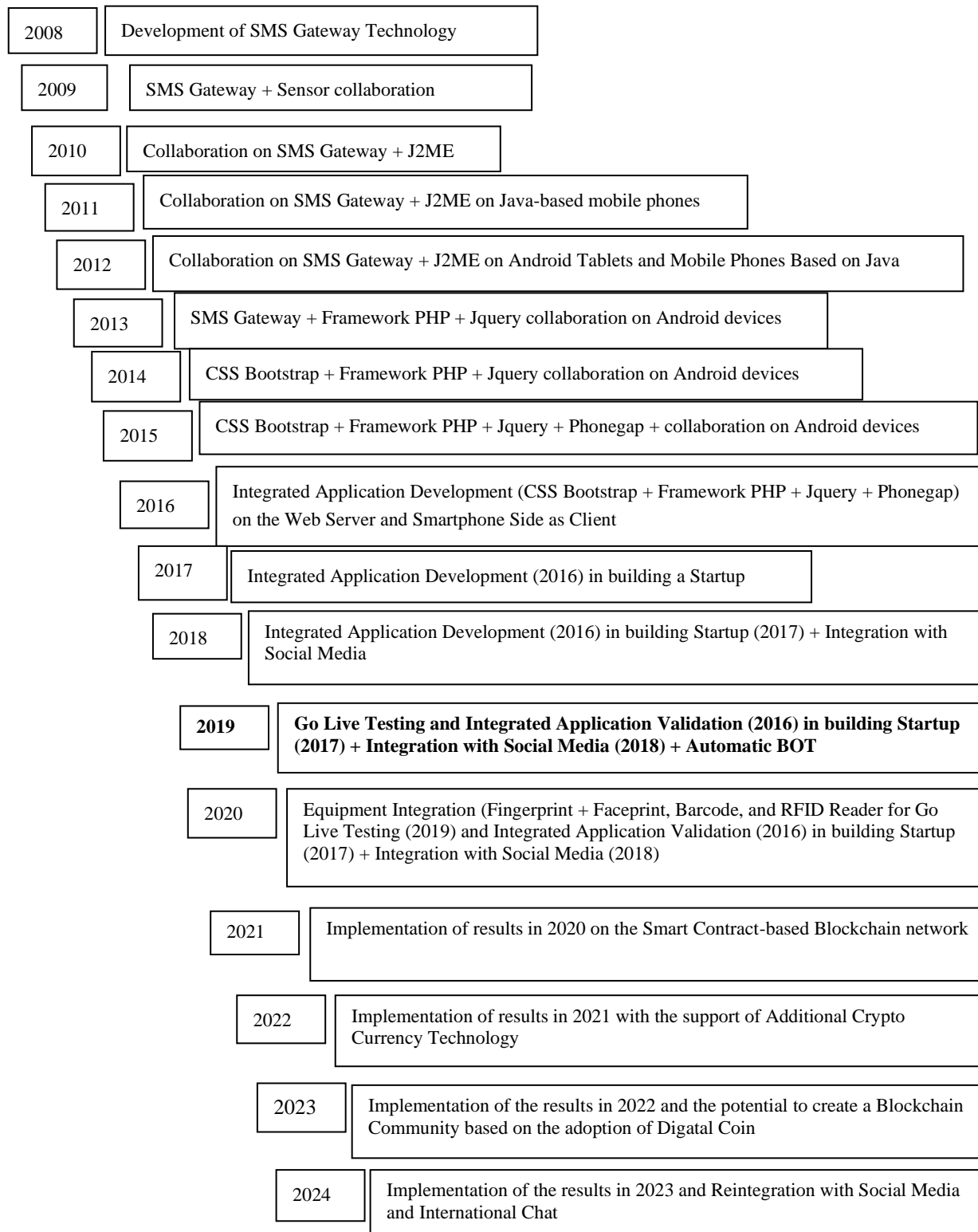


Figure 1. Our Research Roadmap

Our Research Goal in 2019 is Go Live Testing and Integrated Application Validation (2016) in building Startup (2017) + Integration with Social Media (2018) + Automatic BOT. And of the many Instant Messaging, we chose Telegram because we were greatly helped by the bot development facilities provided by Telegram (Telegram, 2019; Github, 2019). In the following year (2020) we will develop connectivity between Telegram Bot and hardware like many researchers have done (Oliveira *et al.*, 2016; Albab, 2017; Rachman *et al.*, 2017; Agung *et al.*, 2018 a,b; Atmojo, 2018 ; Fathoni *et al.*, 2018).

## Result and Discussion

In this paper we display a snippet from a large part of the telegram bot application that we developed in 2019 to be applied in the scope of the computer science faculty where we conduct research. To better understand what we are doing, readers can try our own bot which we share the address at the end of this discussion.

### Hardware Architecture

Hardware architecture can be seen in the following figure 2:

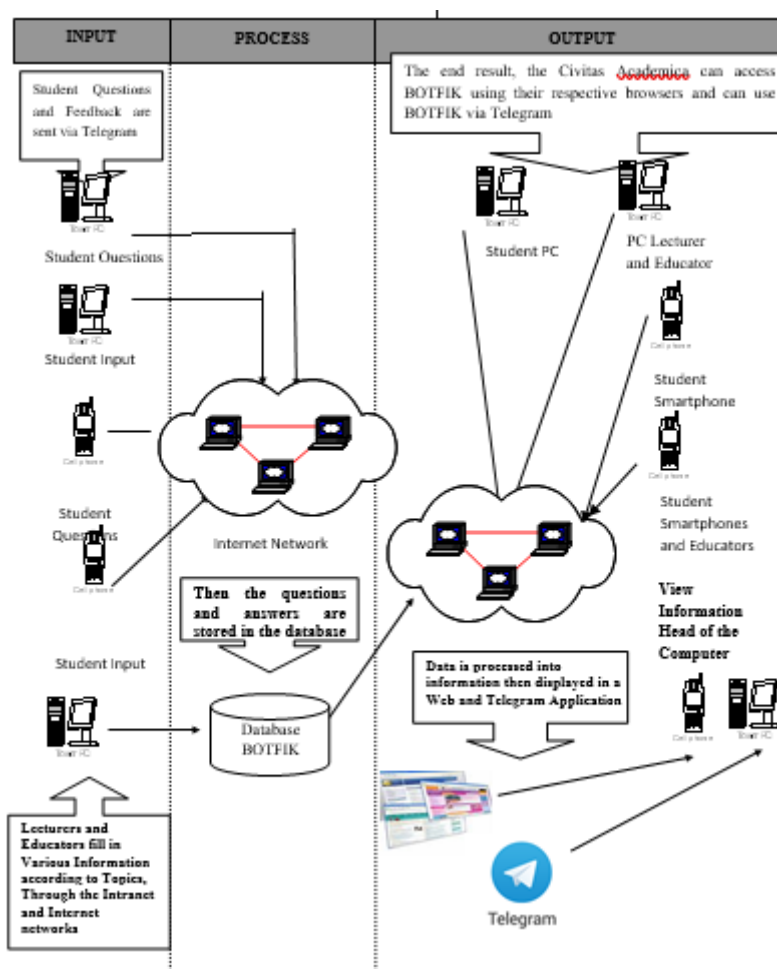


Figure 2. Hardware Architecture

The essence of the description in Figure 2 is how to use free but powerful instant messaging to provide information services that can be accessed on many devices both personal computers, tablets, and the like. what is needed is an internet connection (Telegram, 2019). In the first year we focus on optimizing the potential of telegram bots to collaborate with programming languages and databases.

### Database Model

The figure below is a piece of database design with the aim of sending messages using a telegram bot

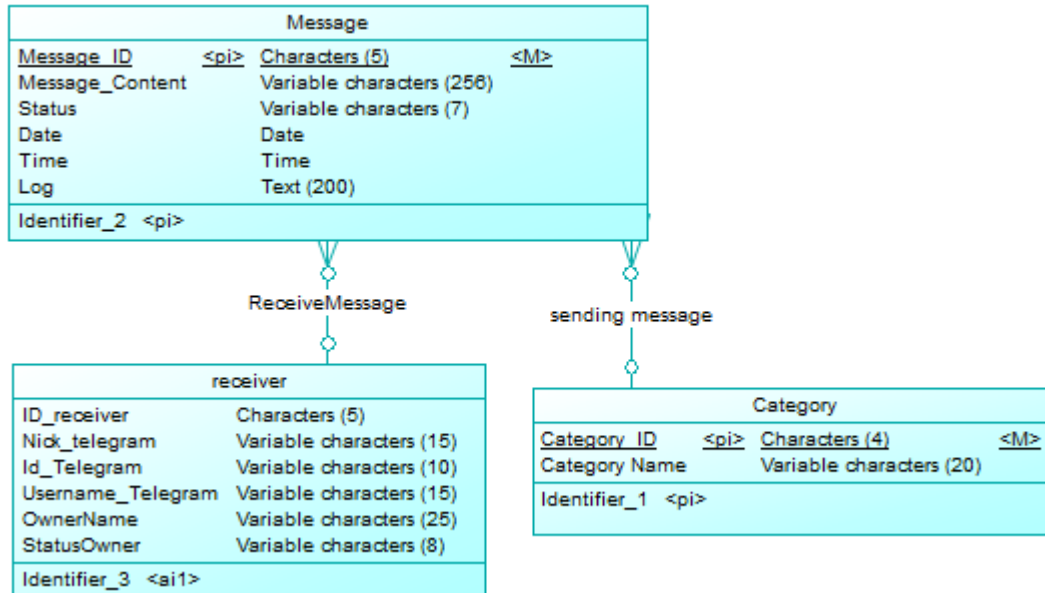


Figure 3. Conceptual Data Model

The CDM figure above explains that each message has a category, an explanation of exactly when the message was sent, and who received the message. A message log is also provided to provide proof of transaction delivery of the message database. Next, we generate it into a physical database using the MySQL Server 5 Database as shown in Figure 4

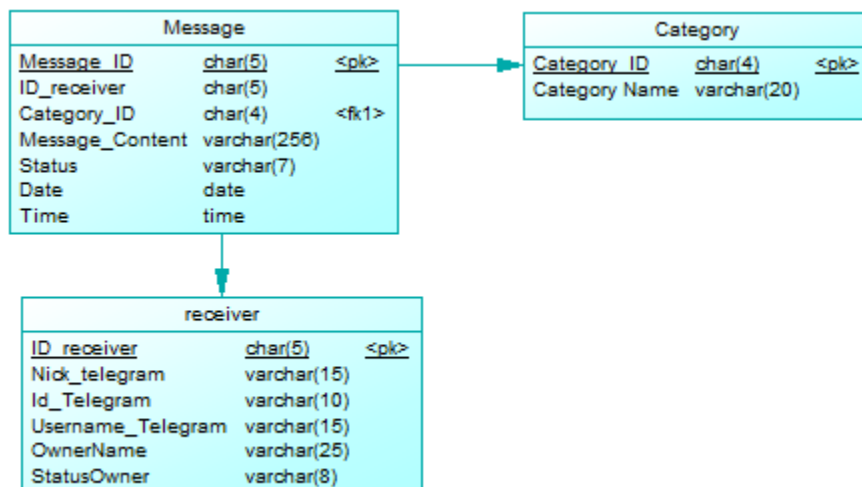


Figure 4. Physical Data Model

Then we attach the Web Application with the PHPMyAdmin function into the PDM structure in Figure 4 to facilitate message data manipulation. Then the three tables are filled with sample data as shown in Figure 5.

Category_ID	Category_Name
C001	general info
C002	task info
C003	exam info

ID_receiver	Nick_telegram	Id_Telegram	Username_Telegram	OwnerName	StatusOwner
R0001	Rizky 84	3725584	@rizkyparlika	Rizky Parlika	Student

Message_ID	ID_receiver	Category_ID	Message_Content	Status	Date	Time	Log
M0001	R0001	C003	The following link to do the Online Test : t.me/le...	Success	2019-09-01	05:07:10	Success-2019-09-01-05:07:10- The following link to ...

Figure 5. The three tables

Next will be displayed an example of access to the telegram bot (Telegram, 2019 ; Github 2019). The first step is to look for it through the telegram application. then a welcome message will appear. Next give the command / Start.

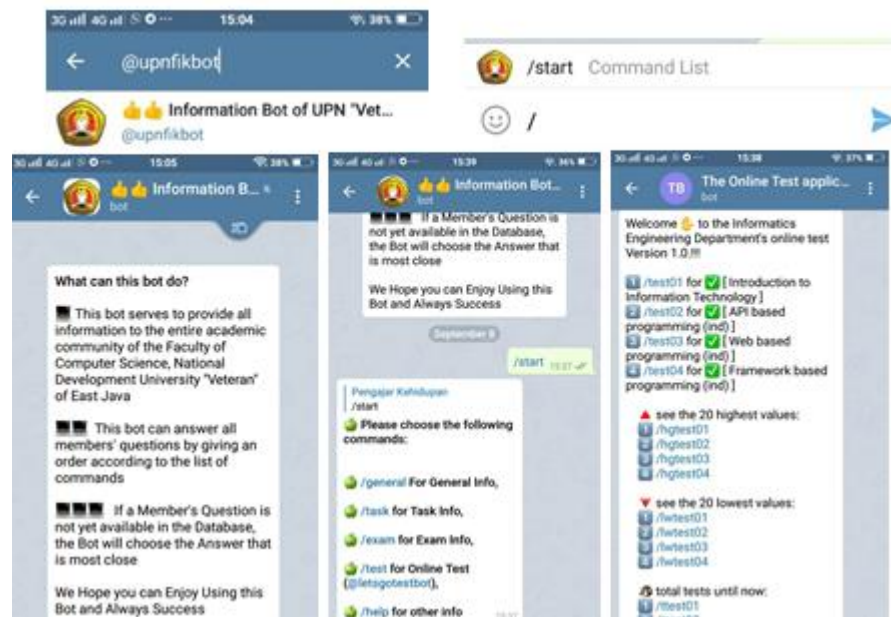


Figure 6. Find the bot

For example after choosing start, then we choose @letsgotestbot which is a derivative part of the main bot. Then the next will go to bot @letsgotestbot (Parlika R., Pratama A, 2019 b). which serves to test the learning outcomes at each lecture meeting, of course for the security side you can add an encrypted login facility as needed (Parlika R. Michael L. Putra H.R.,Satria V.H., Pralas F.H., 2019) To try out more of the features found in the Bot that we have developed, please type @upnfikbot in the telegram search facility and please try it directly. And if there are criticisms or suggestions please send an email to the author.

## Conclusion

The results of the study can be concluded that:

1. The telegram bot was successfully used to build Chatbot.
2. BOTFIK 2019 Chatbot Service is able to bridge the management of the Faculty of Computer Science with students in providing the required information more quickly and without time.
3. Information can be entered at any time in the Bot Telegram database and immediately can be accessed by students when they give orders to access certain information

## Suggestion

Research on the use of Telegram Bot as the life of an information system must continue because it is very potential to build important services such as sending messages with triggers and automatically, sending broadcasts with certain categories, as notification of every database transaction occurrence, as a log on every access to the system information and various other important abilities.

## Acknowledgment

The author would like to thank the Research and Community Service Institute and all the Leaders and Community Members of the Faculty of Computer Science National Development University "veterans" of East Java for the implementation of Our Research in the 2019 RISTI Scheme.

## References

- Agung, S A., Yuniarti, E., and Sanjaya, E. (2018a). Design of Home Automation Based on Raspberry Pi 3 Model B With the Telegram Social Media Application Interface as a Control System. *AL-FIZIYA*, 1(2): 1-6
- Agung, S. A., Yuniarti, E., and Sanjaya, E. (2018b). Telegram Bot Integration with Face Recognition as Smart Home Features. *International Journal of Computer Applications*, 182 (13): 0975- 8887.
- Albab, M.U. (2017). Prototype monitoring system for mushroom cultivation based on internet of things using the telegram chat application. *Thesis*, UTY: Yogyakarta
- Atmojo, Y.P. (2018). Bot Alert Snort with the Telegram Bot API on Intrusion Detection System: IDS Case Study on a Web Server. *National Seminar on Information Systems and Information Technology*, STMIK Pontianak: Pontianak
- Elango S. (2018) Ai Powered Chatbot For Ftms Learners. *International Journal of Education, Learning and Training*, 3(1): 1-6.
- Fathoni, P. E., and Suhendra, T. (2018). Realtime monitoring system in the server room office of the bintan district tax and levies management agency. *Thesis*, UTY: Yogyakarta
- Github (2019). *A collection of the Telegram Bot Program*, <https://github.com/search?q=bot+telegram>, accessed on 4 September 2019 11:40 PM.
- Hiremath, G., Hajare, A., Bhosale, P., Nanaware, R., Wagh, K.S. (2018). Chatbot for education system. *International Journal of Advance Research, Ideas and Innovations in Technology*, 4(3): 1-6
- Maulayya, F.R., Arifin, M.Z., and Hariono T. (2019). The design of "Telegram bot api" for academic information system services in the area using the long polling method, *SAINTEKB. Journal of Science and Technology*, 1(11), 10-19.
- Morze, N., Buinytska, O., Varchenko-Trotsenko L. (2017). *Use Of Bot-Technologies For Educational Communication At The University*. Ukraine: Borys Grinchenko Kyiv University
- Oliveira, J., C., Santos, D.H., and Neto M.P. (2016). Chatting with Arduino platform through Telegram Bot. *IEEE International Symposium on Consumer Electronics (ISCE)*: Brazil
- Parlika, R. and Pratama A. (2019a). News Viewer Application Realtime Based on Telegram Bot Using Web API (Apbr Version 1.0). *Proceedings of the "Santika 2019" National Seminar with the theme: "Data Revolution in the Development of Digital Industries"*. Surabaya: UPN
- Parlika, R., Pratama, A. (2019b). The Online Test application uses Telegram Bots Version 1.0. *Conference International Conference on Science and Technology (ICST 2019)*, Surabaya: UPN
- Parlika, R. Michael L. Putra H.R., Satria V.H., Pralas F.H. (2019). Building a Login Encrypted Using Telegram Bots



- 
- and Mysql Database. *Proceedings of the "Santika 2019" National Seminar with the theme: "Data Revolution in the Development of Digital Industries"*. Surabaya: UPN
- Parlika R., Pratama, W., Atmaja, P.W. (2018). Rizubot Version 1.0 algorithm: How to read the price movements of Crypto Currency Using the API to find a good purchase price. *Conference International Conference on Science and Technology (ICST 2018)*, Surabaya: UPN
- Portela, M. and Granell-Canut C. (2017). *A new friend in our Smartphone? Observing Interactions with Chatbots in the search of emotional engagement*, Spain: Universitat Jaume I Av. Sos Baynat
- Rachman, D., Al Azam, M.N., Anindito, B. (2017). Smart home monitoring and control system using internet messaging infrastructure. *Conference: 1st International Conference on Convergence and its Application (ICCA)*, Surabaya: UPN
- Ramadhan, F. (2018). The development of interactive mathematics learning media with the telegraph social media fire bot at the Surabaya pharmacy academy. *IT – EDU*, 2(2): 145 – 152.
- Telegram (2019). *Bots: An introduction for developers*, <https://core.telegram.org/bots>, 2019. accessed on 4 September 2019 11:40 PM.
- Zubaidi, A., and Ramdani (2019) Service and Academic Information Based on Telegram Bot in Mataram University Informatics Engineering Study Program. *JTIKA*, 1(1): 26-57