**AN INTERACTIVE AGENT THAT DELIVERS ACADEMIC-RELATED INFORMATION TO STUDENTS WITHIN COMPUTER SCIENCE DEPARTMENT**

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**1.1 Background of the Study**

At the beginning of a new session, the department receives many admitted students and to convert this admission into enrolments, swift communication is crucial. Students may have questions ranging from courses offered, course credit load, lecturers and their courses. Students comes to computer science department without knowing the courses and lecturers and will need assistance to settle down in the school. With so many on-going registrations, the department can find it difficult to respond to every student even after orientation. Apart from prospective students, returning students need to get certain information about recent development in the department. Ahmadi et al. (2020)

The need for department inquiry system arises due to various reasons that include: the in-existence nature of departmental website, an outsider would not know where to search for a particular piece of information, difficult for the person outside college’s domain to extract information.

Telegram bots provides solution to this problem by providing all the important information they need to get comfortable in school. It also helps students navigate through the usual interface used by people every day on their smartphones. A telegram bot is an artificially intelligent software application used to conduct an automated online chat conversation with a user in natural language (human language such as English) via text. Telegram bot recognize the user input as well as by using pattern matching, access information to provide a predefined acknowledgment. It is implemented using pattern comparing, in which the order of the sentence is recognized and a saved response pattern is acclimatize to the exclusive variables of the sentence. They cannot register and respond to complex questions, and are unable to perform compound activities. (M. Dahiya, 2018).

This proposed telegram bot is developed using a mobile-based application and implemented on telegram using the python request library, BotFather API, while Django(python)will serve as backend these are the modern language used in developing the system. The platform makes it easy to design and integrate a conversational user, the telegram bot uses a GUI (Graphic User Interface) integrated into a web app to provide answers to user’s query.

**1.2 Statement of the Problem**

Applicants are buzzing with inquiries as the new academic year approaches, and it's surely a busy time for the department to be responding to an overflow of inquiries demanding quick responses by the students such as the courses that they are to offer each semester and semesters to come, the course credit loads are also important to make inquiries about, the lecturers, and what courses or courses they take. In previous years, students and parents had to visit the institution to inquire about specifics and other departmental information, which was a tedious and time-consuming procedure. This is also a time-consuming and resource-intensive procedure for the departmental offices. This may now be done via the internet with telegram bots to save time, energy, and resources.

**1.3 Aim and Objectives of the Study**

To develop an application based on a telegram bot, that serves as an interactive agent to aid students with academic-related information and requests regarding the department.

**OBJECTIVES**

The objectives of this project are:

1. A responsive GUI that replies to users will be implemented to stimulate a real person conversing.
2. To implement a system where vital testing will be carried out to ensure the efficacy of the research work

**2.1 LITERATURE REVIEW**

Article Title: Design of Telegram Bots for Campus Information Sharin*g*

Authors: Setiaji, H., & Paputungan, I. V. (2018).

**Summary of the work**

This paper introduces a Telegram bot designed to facilitate campus information sharing, utilizing Webhooks as the communication method. Webhooks offers real-time, low-latency communication and the ability to handle multiple concurrent requests efficiently within the Telegram bot. The bot functions through specific commands to deliver information as required. While the Telegram bot prototype demonstrates the effectiveness of Webhooks in providing requested information, the study underscores the complexity and challenges associated with configuring Webhooks for this purpose.

**Methodology**

The methodology employed in this study utilizes MySQL as the database system, Python as the primary programming language, and incorporates protective mechanisms within the Telegram bot for secure information dissemination. The data is stored and managed in the MySQL database, and Python is used to develop the bot's functionality. Protection mechanisms are integrated to ensure the security and confidentiality of the shared information during the Telegram communication process. This comprehensive approach encompasses database management, programming, and security measures to enable the efficient and safe functioning of the Telegram bot in its role of information dissemination.

**Recommendation**

Based on the presented design and prototype of the Telegram bot, it is recommended to further enhance the bot's capabilities by developing a visual interface, as indicated as future work. A visual interface can offer a more user-friendly and interactive experience, expanding the bot's functionality and accessibility. Additionally, it is advisable to continue optimizing the bot's performance to ensure rapid response times. This could involve fine-tuning the bot's ability to handle complex tasks efficiently, further enhancing user satisfaction.

**Research Gap**

One notable research gap in this study is the potential for exploring the design and implementation of visual elements that could contribute to a more engaging and intuitive user experience. Furthermore, the analysis of bot performance, while showing favorable response times, could be extended to encompass a broader range of use cases and scalability assessments.

Article Title: Design of Academic Information System Based on Bot Telegram in Smart Campus

Authors: Ahmadi, A., Setiawan, D., Suprayitno, S., & Hartoko, P. (2020).

**Summary of the work**

This research introduces the concept of a Smart Campus, aiming to enhance academic information systems through integration with the Telegram messenger application. Leveraging the accessibility and versatility of Telegram, students receive real-time notifications and can engage with a dedicated Telegram Bot to access comprehensive information related to their institution, STTAL. The bot facilitates material uploads by administrators, enabling students to conveniently download relevant course materials. With 11 carefully designed commands as a prototype, the Telegram Bot proves to be an invaluable tool for academic staff and lecturers, simplifying the communication of vital information to students and fostering an efficient and user-friendly platform for campus-wide engagement.

**Methodology**

The methodology involves using a combination of tools and technologies. Firebase Database serves as the database system, while PHP integrates with HTML for dynamic web pages. Domains are used for server identification, hosting for data accessibility, Bootstrap for performance optimization, and Macromedia Dreamweaver as an HTML editor for web design. XAMPP facilitates development and testing in a controlled environment, streamlining the system creation process.

**Recommendation**

it is recommended to further enhance the system's design and functionality. To make the Telegram bot more engaging, the design of commands should be refined, ensuring a user-friendly and attractive interface. Additionally, incorporating a feature for student grade management, where lecturers can input grades through the Telegram bot, would be valuable.

**Research Gap**

The study indicates room for improvement in the Telegram bot's design and functionality. It highlights the potential to enhance user experience and expand the bot's capabilities, particularly in managing student grades. The proposed integration of the bot server with campus sensors presents an exciting area for future research, bridging technology and campus environment monitoring in the Smart Campus concept.

Article Title: Telegram Bot Implementation in Academic Information Services with The Forward Chaining Method

Authors: Rianto, R., Rahmatulloh, A., & Firmansah, T. A. (2019)

**Summary of the work**

This research explores the use of instant messaging technology, specifically Telegram, as a means of delivering academic information swiftly and efficiently to students, faculty, and the academic community. With the prevalence of mobile devices and smartphones, traditional Short Message Service (SMS) is giving way to real-time communication through instant messaging applications. Telegram's unique features, notably the bot feature, which allows for user-customized bots, provide an effective solution for academic information dissemination. The study employs the Rational Unified Process (RUP) model and the Forward Chaining method, utilizing the Python Telepot Framework for Telegram Bot API. The resulting application streamlines communication and enhances the delivery of academic information, benefiting all stakeholders within the academic community.

**Methodology**

The methodology employed in this study is the Rational Unified Process (RUP), originally developed by Rational Software Corporation. RUP is rooted in the object-oriented paradigm and centers its activities on the creation of models using the Unified Modeling Language (UML). This systematic approach provides a structured framework for the development and implementation of the academic information service application, ensuring a cohesive and well-organized process guided by established software engineering principles and modeling techniques.

**Recommendation**

It is recommended to incorporate push notifications when the bot receives new information updates. Additionally, there is potential for integrating the developed bots with other systems, offering a more comprehensive and interconnected platform for academic information delivery and accessibility.

**Research Gap**

The gap lies in the potential for enriching the bot's capabilities, particularly by adding push notifications to alert users of new information promptly. Moreover, the research points to the prospect of integrating the bot with other systems, providing an opportunity for more comprehensive and interconnected solutions in the realm of academic information services.

Article Title: The Role of Telegram Application for Information Sharing in the Case of Online Ge’ez Language Learning

Authors: Selomon Y. (2022)

**Summary of the work**

This study explores how online resources, particularly on Telegram, aid Ge'ez language learning. Using a quantitative research approach, the analysis focuses on Telegram channels created between 2017 and 2021 for Ge'ez language learning. The study reveals 31 active channels with 85,970 subscribers providing learning materials from basic to advanced levels. The analysis emphasizes a positive and highly correlated relationship between the number of subscribers and shared links, underscoring Telegram's pivotal role in supporting Ge'ez language learning online.

**Methodology**

This study employed a mixed-method approach, combining quantitative and qualitative data analysis. Data were initially recorded in an Excel file and later converted to SPSS format for quantitative analysis. Various data points, including subscriber counts and types of content shared, were presented using narrative descriptions, tables, and graphs. Subscribers and channel numbers were quantitatively analyzed for frequency and percentage. Qualitative data were presented in narrative form, and quantitative correlations were determined using SPSS.

**Recommendation**

The study suggests maintaining up-to-date content on Telegram channels for Ge'ez language learning to create a dynamic learning environment. It also emphasizes the importance of adapting teaching methods for online learning, given the impact of the COVID-19 pandemic.

**Research Gap**

Further research could explore the teaching approaches used in these Telegram channels and investigate learner preferences and challenges in online Ge'ez language learning.

Article Title: Telegram: An Instant Messaging Application to Assist Distance Language Learning

Authors: Faramarzi, Sajad & Tabrizi, Hossein & Chalak, Azizeh. (2019).

**Summary of the work**

The study highlights the comprehensive capabilities of the Telegram application, an accessible and free online tool that serves as an all-in-one solution for a variety of purposes. It offers ample cloud-based storage, supports collaborative online classes, features numerous robot assistants, and allows users to create customized bots for specific needs. This versatility has made Telegram a favored choice among educators and learners at all levels, streamlining their digital interactions and making it a preferred platform for various educational activities.

**Methodology**

The methodology for this project involves the development of a student Telegram Bot using the Python request library, BotFather API, and a database system based on SQLite. The Bot will be designed and implemented with these tools to enable its functionality and interaction with users. The Python request library will facilitate communication between the Bot and the Telegram platform, while the BotFather API will be used for bot creation and management. The SQLite database system will serve as the data repository for the Bot's operation, allowing for the storage and retrieval of relevant information.

**Recommendation**

The study suggests adapting educational policies to support online communication through Telegram and ensuring widespread broadband internet access. Telegram should be embraced as a versatile educational tool.

**Research Gap**

Future research could explore language skill assessment and computerized examinations on Telegram, as well as delve into the dynamic writing process, learner engagement with texts, and statistical analyses of test results for a deeper understanding of Telegram's educational potential.

**3.1 PROPOSAL METHODOLOGY**

The research approach is a rigorous investigation like this to uncover new facts or information about the existing system. This study’s research technique comprises firsthand information from the department and the internet

**3.1.1 INTERVIEW**

The primary goal of utilizing interviews as a data-gathering strategy is to collect data in a comprehensive and intensive manner. The researcher met with the project coordinators from the department and obtained trustworthy information based on the questions provided by the researcher.

**3.1.2 DIRECT OBSERVATION**

This approach was used to collect information/data for this study by examining how the manual system was carried out, the method provides varying degrees of control over the context in which they are used, and the careful inspection revealed the obvious flaws in the present system.

**3.1.3 INTERNET**

Internet as a method of data collection will be employed, the internet will be used in sourcing information on regions that appear tough or perplexing in order to attain a workable result.

**3.1.4 CHOICE OF PROGRAMMING LANGUAGE**

This research work will be a mobile-based application and will be implemented on a relational database system (SQLite). The student telegram Bot will be developed using the Python request library, BotFather API, while Django(python) will serve as the backend these are the modern languages used in developing the system.

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