Artificial Intelligence System for Combating Terrorism in Nigeria

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Abstract- Security agencies, academic institutions, and business sectors have been actively researching security issues and putting various security-enhancing solutions into place. The applications of mobile AI systems have been used in various domains to combat security threats and terrorism. In this effort, most developed systems could not store the user's common routes, supervise the user as they move from one place to another, and automatically send alerts in case of any anomaly. The study focused on designing an AI system that can assist the NAF in combating terrorism using an Android mobile app. The objectives of designing a location tracker, building an AI model, and testing the suitability of the prototype were achieved. The app prototype was developed using Structured System Analysis and Design Methodology (SSADM) using Java 2 Micro-Edition (J2ME) application in which a GPS-enabled mobile phone obtains and transmits its position data (latitude/longitude), route name, and speed to an internet-connected database server at 10-second intervals. An optimal method for detecting deviations from the pre-planned route and speed range can be developed in the route-geo-system application which connects to the server and retrieves position data to determine whether it is within the specified route and whether the user is traveling at the appropriate speed. For better implementation of such systems, it is advised to employ secondary locating techniques, The application running on the mobile phone should use tools like critical point algorithms to limit the number of requested GPS fixes to a minimum to save power, UDP should also be employed and the GPS chip can also be incorporated into other objects.

I. INTRODUCTION

The world is an information society, where the standard of living and the probability of security, social, economic, and development depend on information and its positive use. Artificial intelligence (AI) has been used in various fields and areas of specialization such as facial recognition systems, biometric systems, manufacturing robots, unmanned aerial vehicles (UAVs), drones, satellite systems, self-driving cars, smart assistants, proactive healthcare management, cross-team chat room, social media monitoring and many more. Darrel and John (2018) stated that a truly transformative capability requires visual intelligence that enables these platforms to detect operationally significant activity and report on that activity so warfighters can quickly focus on important events. AI is an excellent technology that can be used in all fields. Imagine the application of the above systems in military and other security architectures that can be applied to various systems, applications, and existing technologies (Laskowski, 2022).

Artificial intelligence technology is the idea of making machines reason, think, and act humanely and logically using sets of algorithms (Okwor, 2022). Artificial intelligence is not new, but it has become more important now due to recent improvements in big data analytics, machine learning, and deep learning. Sometime back, AI continued to positively change various aspects, leading to the modern industrial revolution. Using AI technologies, a bank of data can easily be transformed into important information or knowledge.

Proposed System

The client-side application software, which includes the user interface and strategies for learning the user's location, is run on the mobile device. The internet is utilized to transmit data from the client to the server using the cellular network, the second important component. The data is posted to the database server in this work using HTTP. Figure 3.1 depicts the organogram of the tracking device. The paper describes a mobile phone location tracking system that has the following attributes:

i. An Android application prototype that can be used for detecting deviations from the predetermined route and speed range.
ii. The prototype can be used to develop applications that can track the last location of users mobile phones. Admin can monitor how frequently their troops go to a particular place.
iii. It can also be used by the NAF to build an app that can track the location of their personnel and logistics.
iv. Previous locations can also be tracked.

II.   ANALYSIS OF THE PROPOSED SYSTEM

A system analysis is a collection of interconnected or interacting components that form an integrated whole. A system collaborates to complete a task to achieve a set of objectives. An analysis is a detailed examination of something's elements or structure, usually as a basis for discussion or interpretation. It entails the systematic examination and evaluation of data or information by disassembling it to reveal its interrelationships (Varol and Abdulhadi, 2018).

The process of gathering and interpreting facts, diagnosing problems, and using the facts to improve the system is known as system analysis. What a system should do is specified by system analysis. In system analysis, more emphasis is placed on comprehending the details of an existing system or a proposed one, and then determining whether the proposed system is desirable or not, as well as whether the existing system requires improvements. As a result, system analysis is the process of identifying problems, investigating a system, and using the information to recommend a system for better improvements (Nwakanma, 2018).

Analysis of the current or existing system with the goal of the proposed system typically reveals the strengths and weaknesses of an existing system or proposed system, opportunities and threats presented by the environment, resources required to carry out, and, ultimately, the prospects for success. System analysis entails the following steps:
i. Identifying the drawbacks of the existing system
ii. Identifying the need for conversion
iii. Performing a feasibility study
iv. Identifying hardware, software, and database requirements

v. The AI system route detection and tracking application framework would be designed and when deployed on android enabled devices where users can be tracked via the application, the server will send to the device's Google locator which in turn gathers facts on the information of the user, such as location name and geographical area, etc.

III.   RESULTS AND DISCUSSION

This chapter presents the results of the research. It provides a prototype for the proposed system. It contains a section on the design and testing involving the prototype of an AI system in Combating Terrorism. The AI application system for detection, tracking, and sending alerts in case of any deviation consists of an app cover symbol, login interface, management dashboard, and SMS alert format in case of deviation.

4.2   User Interface
This is the point of human-computer interaction and communication in a device that displays. It is also the way through which a user interacts with an application.

Plate 1: User Interface Background.

4.2.1   Login Interface
This interface consists of two compulsory fields namely, User ID and Password. This step is important as it provides access only to authorized app users. This is where the user logs in and identifies his destination.
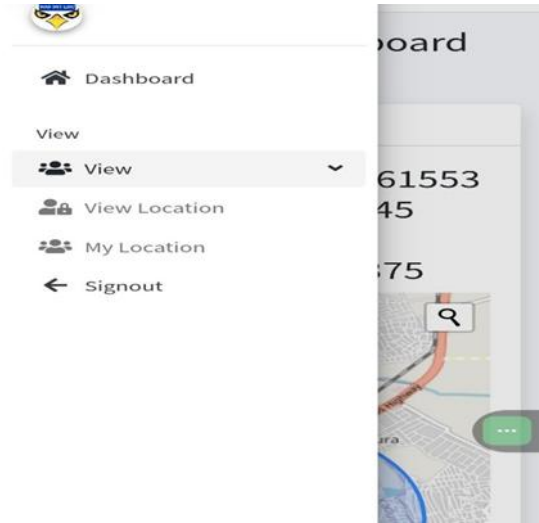
Plate 2: Login Interface.

4.2.2 Management Dashboard

The management dashboard gives the user exact location latitudes and longitudes, and the zoom in and out that helps the user see a clear picture of the map. The user clicks on the search pointer to type his destination routes then routes coordinates are sent to the server for comparison to detect any anomaly.
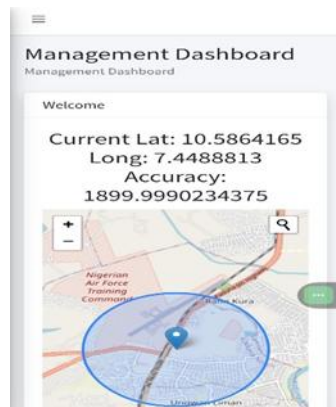

Plate 3: Management Dashboard.

4.2.3 Management Dashboard Menu

The dashboard gives the user access to the menu where he can sign out after reaching his destination he can view his present location and the exact coordinates.

Plate 4: Management Dashboard Menu

CONCLUSION

An ideal security system prototype has been created. By identifying any deviations from the user's, it makes the most of its ability to monitor the users. The system's initial client-side application runs on the user's GPS-enabled, J2ME-capable mobile phone and regularly transmits position data to an internet-connected database server every 10 seconds. It was designed utilizing the J2ME Mobile Information Device Profile from Sun (MIDP). As an emulator and testing environment, Netbeans WTK was employed. So that the user's movements may be successfully tracked and managed, the route-geosystem program (the second client) then selects the position data from the database and compares the received information with the already stored route data. If the user is following the correct path, the app checks to see if their speed is within the established limitations and sends an SMS alert to the admin phone informing them of the deviation.

Commercially available GPS-enabled mobile phones offer a small form factor with wireless communications and GPS hardware. Public ownership of these Compatible devices lowers possible deployment costs and necessitates simply the release of a software program. As a result, this system may be quickly and cheaply built because there is no need for a second phone; instead, the user can use the same phone for both communication and this application.

It may be stated that it is possible to create Location Services and security applications via J2ME since all of the work's goals were met.

REFERENCES

[1] Almusaylim, A. Z. & Jhanjhi, N. (2020). Comprehensive Review: Privacy Protection of User in Location-Aware Services of Mobile Cloud Computing Wireless Pers Commun 111 541-564 https://doi.org/10.1007/s11277-019-06872-3

[2] Babatunde F. (2023). Why Nigeria is Listed among 10 Countries Mostly Impacted by Terrorism July 18, 2023. https://www.dataphyte.com/latest-reports/why-nigeria-is-listed-among-10-countries-mostly-impacted-by-terrorism/

[3] Basri, A.H., Ibrahim, S., Abdul malik, N., & Asnawi, A. (2018). Integrated Surveillance System with Mobile Application. 218-222.10.1109/ICCCE. 2018. 8539244.

[4] Busso, C. & Jain, J. (2011). Advances in Multimodal Tracking of Driver Distraction.10.1007/978-1-4419-9607-7_18. https://www.researchgate.net/publication/23055 6701_Advances_in_Multimodal_Tracking_of_Driver_Distraction

[5] Chauhan, C., Parida, V. & Dhir. (2022). Linking circular economy and digitalization technologies: A systematic literature review of past achievements and future promises. Technological Forecasting and Social Change. 177. 121508. 10.1016/j.techfore.2022.121508.https://www.res earchgate.net/publication/357913602Linking_ci rcular_economy_and digitalisation_technologies_A_systematic literature_ review_of_past_achievements_and_future_pro mises

[6] Darrell M. W. & John R. A (2018) How artificial intelligence is transforming the world https://www.brookings.edu/research/how-artificial-intelligence-is-transforming-the-world/

[7] Dereje, A. & Nixon, S. (2020). Execution of Web-Based Crime and Criminals Tracking System to Enable Security and Quick Access. International Journal of Advanced Engineering Research and Science. 7. 140-179. 10.22161/ijaers.78.16.

[8] Fraser; J., Moos, F., & Shelly, M., (2023) The Application of AI to the Terrorist Threat102603 https://www.ojp.gov/ncjrs/virtual-library/abstracts/notes-application-ai-terrorist-threat

[9] Ganorkar, A. (2020). Live Tracking System. International Journal of Engineering Research and. V9. 10.17577/IJERTV9IS060770.

[10] Gazley, A., Hunt, A. & McLaren, L. (2015). The effects of location-based-services on consumer purchase intention at the point of purchase. European Journal of Marketing. 49. 10.1108/EJM-01-2014-0012. Huang, H. & Gao, S. (2018). Location-Based Services. 10.22224/gistbok/2018.1.14.

[11] Ghosh, J.K. & Ch. V.A. Rao, (2001). GPS Control Point Positioning. Asian GPS Conference held at New Delhi (October 29-30, 2001) pp 43-46.

[12] Idachaba, F. (2021). Design of a GPS/GSM-based tracker for the location of stolen items and kidnapped or missing persons in Nigeria. 6. 56-60.

[13] Kassab, H. & Rosu, M. (2021). An Overview of Own Tracking Wireless Sensors with GSM-GPS Features. Advances in Technology Innovation. 6. 47-66. 10.46604/aiti.2021.4793.

[14] Khalajmehrabadi, A., Nikolaos G., David A. & Ahmad F. T. (2018). Real-Time Rejection and Mitigation of Time Synchronization Attacks on the Global Positioning System. https://par.nsf.gov/servlets/purl/10064597

[15] Khaskheli, S., Pathan, M., Qureshi, B., Khaskheli, A., Nizamani, T., Dahri, N. & Dahri, F. (2021). AI-Based Motor Vehicles Detection and Tracking System Using Smartphone Application. International Journal of Advanced Trends in Computer Science and Engineering. 10. 2278-2282. 10.30534/ijatcse/2021/1121032021.

[16] Kraus, S., Breier, M., Lim, W., Dabic, M., Kumar, S., Kanbach, D., Mukherjee, D., Corvello, V., Piñeiro-Chousa, J., Liguori, E., Palacios-Marqués, D., Schiavone, F., Ferraris, A., Fernandes, C. & Ferreira, J. J. (2022).

Literature reviews as independent studies: guidelines for academic practice. Review of Managerial Science. 16. 10.1007/s11846-022-00588-8.

[17] Kumar, A., Dhingra, S., Batra, V. & Purohit, V. (2020). A Framework of Mobile Banking Adoption in India. Journal of Open Innovation: Technology, Market, and Complexity. 6. 40. 10.3390/joitmc6020040.

[18] Kumar, R., Nagakannan, & Inbaraj, J. (2018). A Recent Review on Growth of Mobile Generations-Case Study. https://www.researchgate.net/ publication /327861617_A_Recent_Review_on_Growth_of _Mobile_Generations-Case_Study / citation/download

[19] Laskowski N. (2022) A guide to Artificial Intelligence in Enterprises https://www.techtarget.com/searchenterpriseai/d efinition/AI-Artificial-Intelligence

[20] Laurie A. H. (2023) Artificial Intelligence: Overview, Recent Advances, and Considerations for the 118th Congress R47644 August 4, 2023 https://sgp.fas.org/crs/misc/R47644.pdf

[21] Leonard, A. (2014). General Applications of GPS in Communication Systems https://www.researchgate.net/publication/34492 3582_GENERAL_APPLICATIONS_OF_GPS_ IN_COMMUNICATION_SYSTEMS/citation/d ownload

[22] Maduranga, K., Weerasinghe, R. Attanayake, R., Santhirasegaram, S., Shevkar, C. Kate, A.,Weerakoon, G., Samanthi, K. A., Upamalika, Kalia, K. & Paranagama, P. (2021). Identification of Novel Bioactive Compounds, Neurosporalol 1 and 2 from an Endolichenic Fungus, Neurospora ugadawe Inhabited in the Lichen Host, Graphis tsunodae Zahlbr. from Mangrove Ecosystem in Puttalam Lagoon, Sri Lanka. Asian Journal of Chemistry. 33. 1425-1432. 10.14233/ajchem.2021.23229.

[23] Martin, G. (2017). Types of Terrorism. In M. Dawson, D. Kisku, P. Gupta, J. Sing, & W. Li(Eds.), Developing Next-Okwor, U. D. (2022). Artificial Intelligence: As A Tool for Combating Insecurity In Nigeria. Artificial Intelligence. Volume 1. 20.