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Eureka Journal of Computing Science & Digital Innovation (EJCSDI)

ISSN 2760-4993 (Online) Volume 2, Issue 1, January 2026

https://eurekaoa.com/index.php/10

GLUCOSE THE LEVEL OF AI WITH THE HELP OF REMOTE MONITORING OF PATIENTS WITH DIABETES AND MOBILE APPS

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Abstract

This article provides a comprehensive technical, clinical, and organization systems for remotely monitoring the level of glucose in patients with clonal analysis of Types 2 diabetes using artificial intelligence (ai) and mobile application. Discusses the work of the architecture of the continuous glucose monitoring (CGI) sensor, mobile application, cloud infrastructure and AI module, as well as the ai model and the validation data security, regulatory requirements, and implementation strategies. The analysis was based on scientific literature published after the size 2020. The article offers practical recommendations and directions for future research.

Keywords: Diabetes; continuous glucose monitoring; CGI; mobile applications; artificial intelligence; remotely monitoring; telemedicine; data security.

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Introduction

Type 2 diabetes (T2DM) is one of the most common chronic diseases across the world today, and its a huge burden to the health care system complications have been spread for the fall. World health organization (who), according to conditions in the year of 2021, the number of those who are suffering from diabetes in the world with 537 783 million and this figure is forecast to reach million people come back year 2045. The disorder of insulin and insulin secretion was mainly rezistentligi the night with T2DM, cardiovascular diseases, nefropatiya, and other retinopatiya increases the risk of severe complications.

Regular and accurate monitoring of the glucose level T2DMni for effective management of the patient, medications to accept to follow the formation of healthy lifestyles and self-management skills necessary to develop it. Traditional monitoring methods (e.g., QGOMQ – self-monitoring of blood glucose) glucose pose discomfort for the patient and often does not reflect changes in the level of full.

In recent years, artificial intelligence (ai) and mobile health applications (mHealth) opened new opportunities in the management of diabetes. AI algorithm for the analysis of large amounts of data, to forecast the level of glucose, and is widely used in the creation of clinical decision support systems to give personalized recommendations. while mHealth apps to patients in real-time monitoring, self-management, and to communicate with your doctor from a distance helps in the formation of healthy lifestyle.

In this article from scientific sources on the basis of the next 2020 ai and mHealth technologies for glucose monitoring of patients with T2DM-modern achievements of the world, system architecture, clinical integration, user experience, security and regulyator wide range of requirements analysis. The article the results of the introduction of innovative approaches in the health care system and gives practical recommendations to improve the quality of life of patients.

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Literature Analysis

1. Total reviews based on the latest source (after 2020)

Since the year of 2020 AI in diabetes management and has conducted many studies on the role of mhealth technologies. As research shows, the ai and mHealth technologies for glucose monitoring, self-management, clinical decision support telemeditsina in the sector and increases productivity.

On the basis of the algorithm of ai (e.g., Random Forest, XGBoost, I have mwf, Deep neural networks) to forecast the level of glucose in risk of diabetes and complications, assessment of pre-shows high accuracy in the detection. while mHealth apps monitoring of the patient's medications to accept to follow the tracking of physical activity and eating habits with the doctor expanded the capacity to communicate from a distance.

Recent meta-analysis using ai and mhealth technologies that would drop significantly the level of hba1c and randomizatsiyalangan clinical studies, patients self-management skills and increased effective shows increases in the health care system.

2. The model and algorithm of AI (ML, DL, explain this ability)

AI algorithm are widely applied in the forecasting and monitoring of diabetes. Machine learning (ML) and deep learning (DL) algorithm, and in particular, random Forest, XGBoost, I mwf, kn ls'tm, CNN, and ensemble models produces high results in the level of glucose in the forecast.

Explainable AI (xa) technologies (e.g., SHAPE, LIMA, Integrated Gradient of the model and the interpretation of the results in securing the confidence of many physicians and patients in making clinical decisions increases. The main advantages of ai on the basis of the forecasting model consists of the following:

- **Speed and accuracy**: the accuracy of the model AI 85-99% reaches this superior to traditional statistical methods.

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- **Personalize**: the model of the patient's age, bmi, laboratory parameters, physical activity, and gives personal recommendations by taking other factors.
- **Let's understandable**: the results of using the lima model shape and will be accessible to the medical staff.

3. Devices and sensors (ug I, QGO'MQ, which prohibition devices)

Modern glucose monitoring systems consists of the following:

- **Continuous glucose monitors (ug'd)**: Dexcom G7, to make it become 3 FreeStyle, Medtronic Guardian 4, 365 Eversense devices such as glucose and forecasts in real time on the basis of ai will measure the level performs.
- **Blood glucose self-control (QGO'MQ)**: Traditional method to get blood from a finger, however, modern devices through bluetooth transmits data to the mobile app.
- **Which prohibition devices**: Smart watches, fitness-trekerlar, the heartbeat, the physical-niy is used for monitoring activity and sleep. They integrated with glucose monitoring is used.

Ug provides the following advantages for the patient and the doctor of my device:

- Real-time monitoring and alerts (hypo/hyperglycemia).
- Technology transfer the data to the cloud and communicate with your doctor from a distance.
- AI on the basis of forecasts and recommendations.

4. mHealth apps and user experience

mHealth applications (for example, mySugr, OneTouch Reveal, Glooko, Dexcom Clarity, FreeStyle LibreLink) provides the following functions:

- Vizualizatsiya and monitoring glucose levels.
- A reminder to take medications.
- Physical activity and nutrition monitoring.
- Tips and remotely communicate with your doctor.

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- Gamifikatsiya and motivational elements (for example, collect points, achievements).

User experience (FT) the design of the app and the motivation of the patient and efficiency of the methods has a direct effect on the use of technology. Research shows that a high rating of the patient s ft of applications monitoring and self-management skills increases significantly.

5. Telemeditsina and clinical integration

Telemeditsina the following advantages and remote monitoring in diabetes management-s gives:

- Remote monitoring and prompt clinical intervention.
- **Clinical decision support systems (KQQT)**: AI on the basis of **KQQT** analysis of patient data, the doctor will give you personalized recommendations.
- **Electronic health records (ESSA) integration with**: All monitoring data is automatically transmitted to ESSA, and this allows you to take clinical decisions quickly and accurately.

COVID-19 pandemiyasi, and has further increased the importance of remote monitoring in the period telemeditsina, safe and effective for patients and doctors created a communication platform.

6. Security and privacy issues etik

Introduction to ai and mHealth together with wide range of technologies, information security, and privacy issues are becoming more pressing etik:

- Data protection: GDPR (Europe), HIP (USA) it is necessary, such as to comply with legislative requirements.
- The transmission of information to third parties: the research shows that many popular mHealth app transfer your personal information to third parties without the consent of the user, and this produces while the problems of privacy and trust.

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• **Etik problems**: the algorithm of ai error, line diskriminatsiya, the consent of the patient's comments, the model and size of issues.

Methodology

1. Research design, sample and data collection

In this article the literature on the basis of the analysis of modern research and technology will analyze the role of ai and mhealth in the monitoring of diabetes. The main methodological approach consists of the following:

• **Literature analysis**: 2020-next year scientific articles, meta-analysis randomizatsiyalangan clinical studies, technical documents and reports regulyator studied.

• **Research design**: many studies randomizatsiyalangan nazoratli studies (the rn), mixed methods, user experience (FT) technical testing and analysis includes.

• **Sample selection**: the research was mainly in adults with type 2 diabetes sufferers, prediabet gestatsiondiabet of the patient and in some cases took part.

2. Data pre-processing and feature detection

AI in the creation of the model, data pre-processing and feature detection the importance of:

• Data cleaning: False, yetishmayotgan or extreme value detection and correction of the world.

• **Feature detection**: Glucose level, HbA1c, bmi, age, sex, physical activity, nutrition, medication intake, sleep and create new properties on the basis of other factors.

• **Normalize the data and coding**Standardization, one-time coding, masshtablash.

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3. Model evaluation and statistical analysis

The effectiveness of the ai model will be evaluated based on the following criteria:

- Accuracy, F1-score, remember, stay accuracy: the level of the overall effectiveness of the error model and assessed.
- Let's understandable: SHAPE, LIMA, Integrated the results of the model using the gradient or comments.
- The kros-valitatsiya and test kits: the ability of synthesis and the stability of the model assessed.

The system architecture and ai approaches

1. The overall design (mobile apps, cloud technologies, Electronic health records)

Modern glucose monitoring system consists of the following main components:

- Mobile app: for patients, glucose monitoring, medication of note, physical activity and nutrition monitoring, communicate with your doctor, vizualizatsiya and motivational elements.
- Cloud platform: data storage, AI and prognosis analysis on the basis of clinical decision support.
- Electronic health records (ESSA): ESSA clinical monitoring and data can be transmitted to a clinical complete sight provides for this doctor.

2. Remote monitoring and real-time calculation

- Edge computing: models of ai at the device (e.g., smartphone or my transmitter ug) run in real time, forecasts and warnings, to give them the opportunity to work in both cases if you are connected to the internet.
- Real-time monitoring: the device I have that prohibition ug and continuous monitoring of glucose levels with the help of anomalies detected when a quick warning.

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3. Integration of AI approaches and models

- placing the model: Lite, TensorFlow, PyTorch Mobile, ai platforms such as mobile apps using firebase to integrate the ml model to make.
- Understandable AI: interpretation of model results for the shape, LIMA, the engine carefully, the introduction of technologies such as kontrafaktual analysis.
- Personalizatsiya: the model will give you the individual features of the patient on the basis of personal recommendations.

4. The user interface panel and clinical management

- The user interface (FI): Intuitive, simplified, said vizualizatsiyalan data, notes, motivational elements, language and cultural compatibility.
- Clinical control panel: glucose levels for patients, Doctors, medication intake, physical activity and other indicators in real time, see warnings and recommendations to get the opportunity.

Discussion and Recommendations

1. The interpretation of the results and limitations: the research shows that ai and mHealth in diabetes monitoring and management technologies leads to the following main result:

- The accuracy and will increase the effectiveness of glucose monitoring: accurately and in real time forecasts on the basis of ug I and ai allows you to monitor glucose levels.
- Patients self-management skills: mHealth applications, personalized recommendations motivational elements and the patient-s medication monitoring and to receive increases that would follow.
- **Clinical decisions and it is clear**: essa kqqt sight provides for the integration of a full clinical and doctors.
- Telemeditsina and remote monitoring for patients in remote areas show the possibility of tibbiyyordam Pandemiya conditions and quality will increase.

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However, the following restrictions exist:

- Data security and privacy challenges: many applications, without the consent of the user third-party data transmits, sure this etik and produces troubles.
- Regulyator and the complexity of the certification process: ai and mHealth technology and certification requirements for the introduction into clinical practice of regulyator strictly required.
- Technological and digital variations: less than older technologies users and opportunities to use technology for patients in remote areas can be limited.
- **The interpretation of the model development**: model of ai "qoraquti" feature, diskriminatsiya the risk of the trust of the doctor and the patient can slow down.

2. Practical recommendations for the health care system

- To integrate ai and mhealth technologies in the health care system we recommend the following steps:
- The patient and the doctor to read: use of technology, conduct training on security and privacy.
- To comply with the requirements Regulyator: the fda, ceo and regulyator to strictly follow local requirements, the introduction of monitoring and certification of security.
- Information security and privacy assurance: data encryption, you consent to the block chain and other benefits to being justified by modern technology.
- User experience (FT) continuous assessment and improvement: to simplify the design of the app, language and cultural compatibility, motivational elements.
- Clinical integration and mutual work: FHIR, openEHR, HL7, integration with other systems based on standards such as eh and provide.
- The ai model to increase further comments: the introduction of ai technology Accessible, the doctor and the patient to make the results understandable.

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Summary

Artificial intellect of glucose in patients with type 2 diabetes monitoring and management of mobile health apps and revolutionary changes they wreak. I ai algorithm on the basis of ug and modern, prohibition which devices, mobile health apps glucose monitoring increases the efficiency and accuracy of patients ' self-management skills allows you to take clinical decisions quickly and accurately. Pandemiya the capacity to provide quality medical assistance in remote areas and remote monitoring Telemeditsina and expanded.

However, data security, privacy, and regulyator etik problems, interpretation of model variations or the like ai and technological restrictions. The introduction of ai technologies for mobile health in the health care system and the patient and the doctor to read regulyator to comply with the requirements of information security, to ensure the continuous assessment and the interpretation of the ai model of the user experience, increase the importance of the process.

Future research directions can highlight the following as: AI technology mobile health and long-term efficacy to evaluate the new algorithm the introduction of ai into clinical practice, enhance the security and privacy of information, technological, and innovative approaches to reduce the gap in the health care system to expand it.

References

1. Stone, H., Dudley, D., & Owen, A. the application as a tool for Remotely monitoring and mobile health early signs of pregnancy, probably these 2 types with diabetes Care. From 2025.

2. Liu, Y., wang, b. in the application using the mobile device data io Advanced chronic disease monitoring, machine learning algorithms and theo frame: a systematic review from 2025.

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https://eurekaoa.com/index.php/10

3. Kiran, M., Xi, Y., Conference, N., Bali, G., Pierscionek, B., Russell, D. in artificial intelligence and machine learning prediction with types 2 diabetes: a comprehensive 33-year bibliometric analysis and literature from 2025.
4. Murpy, M. artificial intelligence in Diabetes Management: transforming care through technology. Journal of Diabetes Medication & Care, 7(5), 266-268, 2024.
5. That ben b. a., O'Connor, S., Mastellos, N., Majeed, A., Fadahunsi, p. k. O'Donoghue, J. Impact on the application of mobile health self-management in patients with types 2 diabetes mellitus: a systematic review protocol. Bmj open, 2019.
6. Ismail, L., Materwala, H., Tayefi, M., constantly ng, P., & Karduck, a. p. machine learning artificial intelligence with Types 2 diabetes: the metho and evaluation. Archives of computational metho engineering, 29, 313-333, 2022.
7. Liu, Y., wang, b. in the application using the mobile device data io Advanced chronic disease monitoring, machine learning algorithms and theo frame: a systematic review from 2025.
8. Alwakid, G., Go, W., & Humayun, M. Enhancement of diabetic retinopathy Using deep learning Prognostication, CLAHE, and es were. Diagnostics, 13, 2375, 2023.
9. Lu, h., nai, S. Hajati, F. Moni, m. a., & Gham, M. a patient network-based machine learning Models for disease Prediction: the case of the 2 types of diabetes mellitus. Applied Intelligence, 52, 2411-2422, (2022).
10. Birhanu, t. e., Guracho, d. y., Asm, S. W., it can be a mobile health application use his d. d. amo diabetes mellitus patients: a systematic review and meta-analysis 2024.