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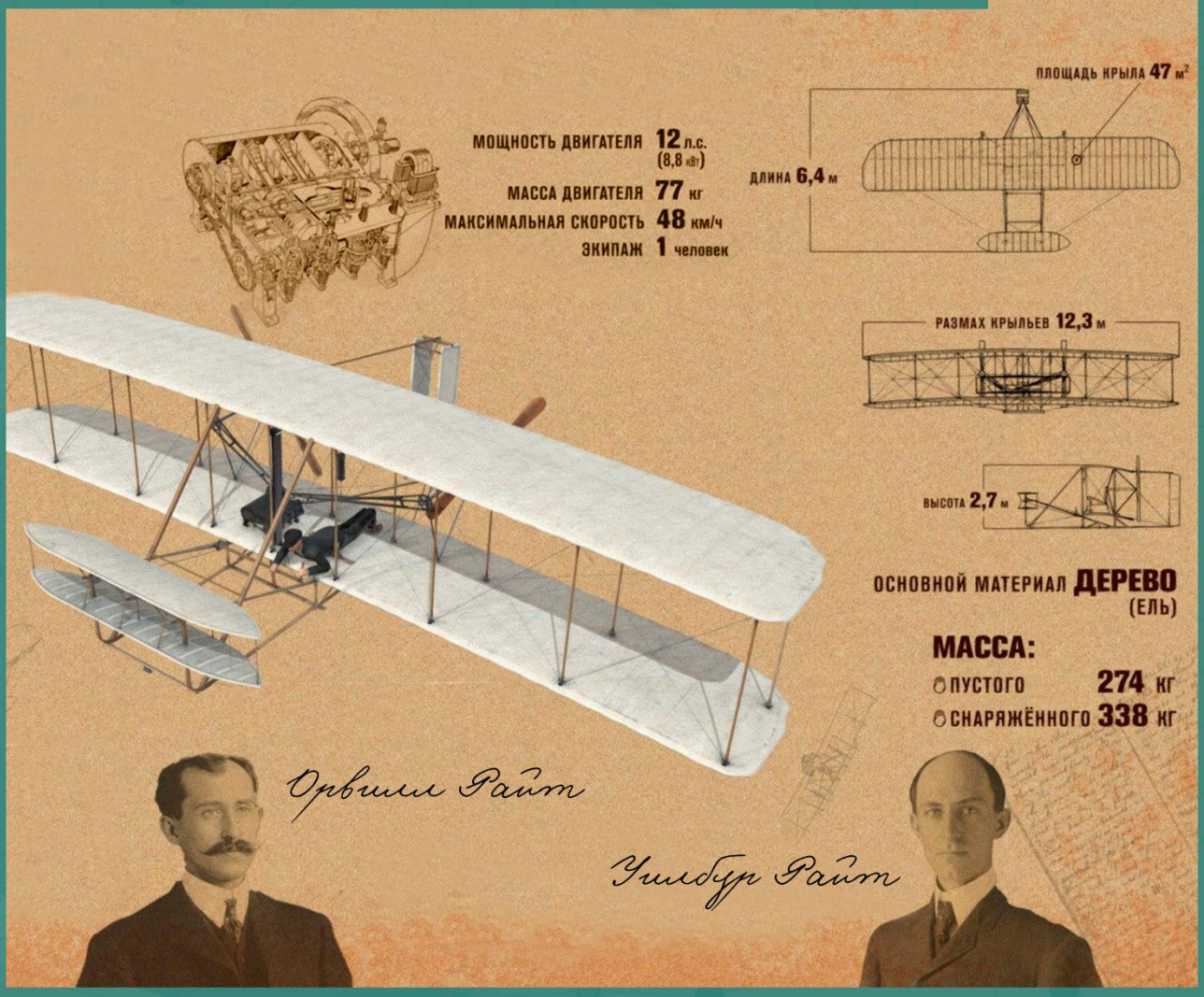

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O‘ZBEKISTON RESPUBLIKASI VA XORIJIY OLIY TA’LIM MUASSASALARI PROFESSOR-O‘QITUVCHILARI, YOSH OLIMLAR, DOKTORANTLAR, MAGISTRANTLAR VA IQTIDORLI TALABALAR

TOSHKENT SHAHAR, AMIR TEMUR KO‘CHASI, PR.1, 2-UY.

+998 97 420 88 81
+998 94 404 00 00

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ЯНГИ ЎЗБЕКИСТОН: ИЛМИЙ ТАДҚИҚОТЛАР 1-ҚИСМ

НОВЫЙ УЗБЕКИСТАН: НАУЧНЫЕ ИССЛЕДОВАНИЯ ЧАСТЬ-1

NEW UZBEKISTAN: SCIENTIFIC RESEARCH PART-1

ТОШКЕНТ-2026

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«ЯНГИ ЎЗБЕКИСТОН: Илмий тадқиқотлар» [Тошкент; 2026]

«Янги Ўзбекистон: Илмий тадқиқотлар» мавзусидаги республика 87-кўп тармоқли илмий маърифий онлайн конференция материаллари тўплами, 30 апрель 2026 йил. - Тошкент: «Tadqiqot», 2026. – 137 б.

Ушбу Республика-илмий онлайн даврий анжуманлар «Ҳаракатлар стратегияси — Тараққиёт стратегияси сари» тамойилига асосан ишлаб чиқилган етти устувор йўналишдан иборат 2022 – 2026 йилларга мўлжалланган Янги Ўзбекистоннинг тараққиёт стратегияси мувофиқ: — илмий изланиш ютукларини амалий-тажриби жиҳат йўли билан фан соҳаларини ривожлантиришга бағишланган.
Ушбу Республика илмий анжуманлари таълим соҳасида меҳнат қилиб келаётган профессор - ўқитувчи ва талабалар-иштирокчилар томонидан тайёрланган илмий тезислар киритилиб бориб, унда таълим тизимида илғор замонавий ёндашувлар, натижалар, муаммолар, ечимлар, статистик вазиятлар ва илмий-тараққиётнинг истиқболли режалари таҳлил қилинади конференцияси.

1.Ҳуқуқий тадқиқотлар йўналиши -
Профессор в.б.,ю.ф.н. Юсувалиева Рахима (Жахон иқтисодиёти ва дипломатия университети)

2.Фалсафа ва ҳаёт соҳасидаги қарашлар -
Доцент Норматова Дилдора Эсоналиевна(Фарғона давлат университети)

3.Тарих саҳифаларидаги изланишлар –
Исмаилов Ҳусанбой Маҳаммадқосим ўғли (Ўзбекистон Республикаси Вазирлар Маҳкамаси ҳузуридаги Таълим сифатини назорат қилиш давлат инспекцияси)

4.Социология ва политологиянинг жамиятимизда тутган ўрни-
Доцент Уринбоев Хошимжон Бунатович (Наманган мухандислик-қурилиш институти)

5.Давлат бошқаруви-
Доцент Шакирова Шохида Юсуповна (Жаҳон иқтисодиёти ва дипломатия университети "Беш муҳим ташаббус" маркази раҳбари)

6.Журналистика-
Тошбоева Барнохон Одилжоновна(Андижон давлат университети)

7.Филология фанларини ривожлантириш йўлидаги тадқиқотлар –

ARTIFICIAL INTELLIGENCE–BASED PREDICTIVE MODELS FOR EARLY DETECTION OF CARDIOVASCULAR DISEASES IN YOUNG ADULTS

Sofia Naaz
Tashkent State Medical University, Tashkent
Email: sofianaaz8099@gmail.com
Najmiddinova Nilufar Nurali qizi
Tashkent State Medical University, Tashkent
Email: nilya_92@mail.ru

Abstract: Cardiovascular diseases remain the leading cause of global mortality and increasingly affect young adults due to early exposure to modifiable risk factors. Conventional cardiovascular risk assessment tools demonstrate limited sensitivity in identifying subclinical vascular dysfunction in individuals under 35 years of age. The purpose of this study was to develop and validate an artificial intelligence–based predictive model for early cardiovascular risk stratification in asymptomatic young adults.

A prospective analytical study included 328 participants aged 18–35 years without previously diagnosed cardiovascular pathology. Clinical, biochemical, inflammatory, and lifestyle parameters were integrated into a gradient boosting machine learning algorithm with five-fold cross-validation. Model performance was evaluated using accuracy, sensitivity, specificity, F1-score, and area under the receiver operating characteristic curve.

The developed model achieved an accuracy of 90.2%, sensitivity of 88.7%, specificity of 91.5%, and AUC of 0.95. Feature importance analysis identified LDL cholesterol, systolic blood pressure variability, body mass index, high-sensitivity C-reactive protein, physical inactivity, and positive family history as dominant predictors. Notably, 23.4% of individuals classified as high-risk by the AI model had low conventional risk scores, indicating improved early detection capability. Predictive simulation modeling demonstrated a potential 18–21% reduction in projected 10-year cardiovascular event probability following AI-guided preventive intervention.

The findings confirm the high discriminative capacity and clinical relevance of artificial intelligence–based predictive modeling for early cardiovascular screening in young populations.

Relevance

According to the World Health Organization, cardiovascular diseases account for more than 20 million deaths annually and remain the primary cause of global mortality [1]. Although typically associated with older populations, epidemiological trends demonstrate a progressive rise in obesity, sedentary behavior, dyslipidemia, and metabolic disturbances among young adults. Early endothelial dysfunction and

subclinical atherosclerotic changes often remain undetected by conventional scoring systems designed for middle-aged individuals.
Artificial intelligence technologies enable identification of complex nonlinear interactions between multiple risk variables, thereby improving predictive precision and enabling personalized prevention strategies.

Purpose

- Develop an AI-based predictive model using clinical, biochemical, and lifestyle data.
- Evaluate model performance and compare it with conventional cardiovascular risk assessment tools.
- Determine key risk factors contributing to early cardiovascular vulnerability in young adults.
- Explore potential impact of AI-guided preventive interventions on 10-year cardiovascular risk projections.

Materials and Methods

Participants: 328 young adults aged 18–35 years, recruited from outpatient clinics and university health centers.
Inclusion criteria: Age 18–35, absence of diagnosed cardiovascular disease, ability to provide informed consent.
Exclusion criteria: Existing cardiovascular disease, chronic kidney disease, diabetes mellitus, pregnancy.
Data collected:

- Anthropometrics: weight, height, BMI
- Blood pressure variability (systolic and diastolic)
- Biochemical: lipid profile (LDL, HDL, triglycerides), fasting glucose, hs-CRP
- Lifestyle: physical activity (IPAQ questionnaire), smoking status, dietary patterns
- Family history of premature cardiovascular disease

Machine learning model: Gradient boosting classifier implemented in Python (scikit-learn). Five-fold cross-validation was used. Dataset split: 70% training, 30% testing.
Performance metrics: Accuracy, sensitivity, specificity, F1-score, AUC.

Statistical analysis: SPSS 27.0, descriptive statistics, feature importance, simulation modeling for preventive impact.
Ethics: Conducted in accordance with the Declaration of Helsinki. Written informed consent obtained from all participants.

Results

The artificial intelligence model demonstrated high predictive performance with:

- Accuracy: 90.2%
- Sensitivity: 88.7%
- Specificity: 91.5%
- AUC: 0.95

The strongest predictors included elevated LDL cholesterol, increased body mass index, systolic blood pressure variability, elevated inflammatory markers, reduced physical activity, and positive family history.
Importantly, 23.4% of individuals identified as high-risk by the AI model were categorized as low-risk by traditional assessment tools. Simulation modeling indicated that early targeted lifestyle modification and risk management in this subgroup could reduce estimated 10-year cardiovascular event probability by up to 21%.

Conclusions

The developed artificial intelligence–based predictive model demonstrates superior discriminative capacity compared to conventional cardiovascular risk assessment methods in young adults. AI-driven stratification enables earlier identification of subclinical cardiovascular vulnerability, facilitating timely personalized preventive interventions.
Integration of such predictive systems into primary healthcare and digital medicine platforms may significantly reduce long-term cardiovascular morbidity and economic burden. Multicenter validation studies are recommended to assess external reproducibility and large-scale implementation feasibility.

References

1. World Health Organization. Cardiovascular diseases (CVDs). Geneva: WHO, 2023.
   Attia Z.I., Friedman P.A., Noseworthy P.A., et al. Age and sex estimation using artificial intelligence from standard 12-lead ECGs // Lancet Digital Health. 2019. Vol. 1, No. 2.
2. European Society of Cardiology. ESC Guidelines on cardiovascular disease prevention in clinical practice , Eur Heart J. 2021. Vol. 42, No. 34. P. 3227–3337

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ТАШКИЛ ЭТИЛГАН

”ЯНГИ ЎЗБЕКИСТОН: ИЛМИЙ ТАДҚИҚОТЛАР” МАВЗУСИДАГИ РЕСПУБЛИКА 87-КЎП ТАРМОҚЛИ ИЛМИЙ МАСОФАВИЙ ОНЛАЙН КОНФЕРЕНЦИЯ МАТЕРИАЛЛАРИ

(1-қисм)

Маъсул муҳаррир: Файзиев Шохруд Фармонович

Мусаҳҳиҳ: Файзиев Фаррух Фармонович

Саҳифаловчи: Хуршид Мирзахмедов

Эълон қилиш муддати: 30.04.2026