Brief information about the project

Title	IRN AP25793719 "Development of a system for analyzing illegal cryptocurrency transactions"
Relevance	Cryptocurrencies are becoming increasingly popular, and many users actively utilize them for various financial operations. However, as their popularity grows, the number of illegal transactions is also increasing. Existing security methods are not always effective, which requires innovative approaches to detect and prevent various types of fraud. In the context of rising interest in cryptocurrencies and their economic significance, the need for modern security methods specialized in identifying and preventing illegal activities is becoming particularly relevant. In Kazakhstan, there is a significant lack of scientific research and technologies for effective monitoring and analysis of cryptocurrency transactions. The proposed system will provide effective tools to counter cyber threats, contributing to the creation of a secure cryptocurrency environment. Amid the active growth of cryptocurrency use in the global economy, the development of a system for analyzing illegal cryptocurrency transactions becomes a crucial element in ensuring financial security. The project will help establish a national system for monitoring cyberspace, which is especially important given the increasing number of cyberattacks and threats. Strengthening cybersecurity is a priority for national security. The implementation of the project will also contribute to the development of the technological sector in Kazakhstan, stimulating the growth of competencies in the development and implementation of innovative technologies. The project will enable Kazakhstan to take an active role in the global cryptocurrency ecosystem and participate in international research initiatives, accelerating the country's integration into the global community of cryptocurrency technologies. An important social aspect of the project is ensuring that the domestic market is provided with proprietary software. The project represents a unique study in the fields of cybersecurity, machine learning, forensics, financial technologies, and data analysis. It belongs to priority areas and is expected to have a significant economic impact. The results are anticipated to be commercialized in the form of tools and software products suitable for use not only in Kazakhstan but also beyond its borders.

Goal	The goal of the project is to conduct a comprehensive study and develop a system for analyzing illegal cryptocurrency transactions, capable of effectively detecting and predicting security threats. The system will focus on identifying suspicious and unlawful activities, including the financing of extremism and money laundering.
Tasks	To achieve the project's objectives, the following tasks will be accomplished: - Research and identification of information sources on cryptocurrency transactions. - Development of algorithms for data collection and preliminary processing. - Development of criteria for classifying illegal transactions. - Creation of a dataset of illegal transactions and generation of features for model training. - Development of machine learning and deep learning models for the classification of illegal transactions. - Development and implementation of a system for the analysis and monitoring of cryptocurrency transactions (software).
Expected and Achieved Results	Expected Results: By 2025: A list of data sources with their complete characteristics will be compiled. A data collection module will be developed to ensure access to comprehensive and up-to-date data for further analysis. Criteria for transaction classification will be established, serving as the basis for the development of analysis and machine learning models. One article will be published in a journal recommended by the Committee for Quality Assurance in the Sphere of Education and Science (KOKNVO) and/or other domestic peer-reviewed scientific publications. By 2026: A dataset of illegal transactions will be created for subsequent training of the machine learning model. Models demonstrating high accuracy in classifying illegal transactions will be developed. One article will be published in a journal recommended by KOKNVO and/or other domestic peer-reviewed scientific publications. By 2027: Software utilizing machine learning will be developed for the automatic detection and classification of illegal cryptocurrency transactions. One article will be published in a journal recommended by KOKNVO and/or other domestic peer-reviewed scientific publications.

Names and Surnames of Research Group Members with Their Identifiers (Scopus Author ID, Researcher ID, ORCID, if available) and Links to Corresponding Profiles	1. Shaizat Medet Zhanbolatuly, - H-index according to the Scopus database - 2, Scopus Author ID: 57216968174, ORCID ID: 0000-0002-1651-8205 Researcher ID: DTG-4486-2022 2. Musiralieva Shynar Zhenisbekovna - H-index according to the Scopus database - 6, Scopus Author ID: 57202216979, ORCID ID: 0000-0001-5794-3649, Researcher ID: ABA-9832-2021
Publications list with links to them	1. Musiralieva Sh., Shaizat M., Beketova A., Abayuly E., Manasova A.. Formation of features and characteristics for identification of suspicious transactions in the bitcoin network. Bulletin of the NAS RK. Physics and Mathematics Series, (1), 2023, pp. 154–169. DOI: https://doi.org/10.32014/2023.2518-1726.175 https://journals.nauka-nanrk.kz/physics-mathematics/article/view/5024 2. Sh. Zh. Musiralieva, M. Zh. Shaizat, A. K. Beketova, A. B. Manasova. Identification of suspicious transactions in the bitcoin network: analysis, features, and machine learning algorithms. BULLETIN of the National Engineering Academy of the Republic of Kazakhstan No. 3 (89) Almaty, 2023, pp. 95-104. https://journal.neark.kz/wp-content/uploads/pdf/%D0%92%D0%B5%D1%81%D1%82%D0%BD%D0%B8%D0%BA-3_2023-w.pdf
Patent information	-