

**DEVELOPMENT STAGES AND AREAS OF APPLICATION OF
DATA MINING**

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Annotation. *The article presents information about the methods and stages of development of data intelligence analysis, which allows using modern technologies to effectively analyze data and extract useful knowledge from it, and how the updating of technologies and methods helps to make the analysis more accurate and effective. With new technologies and innovations, the application will be further expanded, and it will be possible to achieve effective results in various aspects of life around the world.*

Key words: *Intelligent data analysis, modern technologies, useful knowledge, stages of development, technologies, methods, economics, healthcare, innovations.*

Аннотация. *В статье представлена информация о методах и этапах развития анализа данных разведки, позволяющих с помощью современных технологий эффективно анализировать данные и извлекать из них полезные знания, а также о том, как обновление технологий и методов помогает сделать анализ более точным и эффективным. С новыми технологиями и инновациями применение будет еще больше расширяться, и можно будет добиться эффективных результатов в различных аспектах жизни по всему миру.*

Ключевые слова: *Интеллектуальный анализ данных, современные технологии, полезные знания, этапы развития, технологии, методы, экономика, здравоохранение, инновации.*

Data mining (DMM) is the process of extracting useful knowledge from large, complex, and diverse data sets. DMM analyzes data, identifies patterns and relationships, makes predictions, and extracts insights to support decision-making processes. This process is mainly based on artificial intelligence (AI), machine learning



(ML), natural language processing (NLP), and other advanced technologies. DMM is widely used in all industries today. This article provides a detailed understanding of the stages of development of DMM and its main areas of application.

Stages of Development of DMM

The development process of DMM consists of several stages, and new technologies and methods are used at each stage. Each of them allows for better analysis of data and extraction of useful knowledge from it.

Phase 1: Data Collection and Storage (1950s-1980s)

The initial phase involved data collection and storage. With the development of computer technology in the 1950s, data began to be stored electronically. During this period, data was digitized in many industries, and database management systems (DBMS) were used to store and analyze it. However, at this stage, advanced methods for data analysis were lacking, and in most cases, the data was only available for statistical analysis.

Stage 2: Data Analysis and Analysis (1980-2000)

In the 1980s, with the development of artificial intelligence and machine learning methods, a new result came in data analysis. This period saw the introduction of methods such as data classification, regression analysis, and clustering. More analytical productions began to be used in the analysis, output, and decision-making. At this stage, the technologies of “Data Mining” (data mining) and “Business Analytics” (business analytics) appeared.

Stage 3: The development of machine learning and artificial intelligence technology (2000-2010)

By the 2000s, new methods of artificial intelligence and machine learning, deep learning, and deep learning technologies appeared. During this period, data analysis and forecasting systems were able to handle not only static data, but also dynamic and complex data. Machine learning algorithms and neural networks have helped to make analysis more accurate and efficient. New techniques, such as image recognition, natural language processing (NLP), and voice are now possible in areas such as.

Stage 4: Big Data and IoT Integration (2010 to Present)



In recent years, with the integration of "Big Data" technologies and the Internet of Things (IoT), the volume and diversity of data have entered a new stage. During this period, the data to be analyzed is no longer only structured data, but also data in various forms such as images, videos, sensor data, etc. The large volume and speed of data require new artificial intelligence technologies, so analysis systems have begun to use parallel computing and cloud technologies to improve efficiency. During this period, more complete and accurate knowledge is extracted from data using advanced algorithms such as deep learning and reinforcement learning.

Data mining is used in a number of industries today, and each industry requires its own unique methods and approaches.

Business and Marketing: Data mining is an important tool for optimizing business processes and developing marketing strategies. Companies use MIT to analyze customer behavior, forecast sales, and provide personalized product recommendations. Machine learning can be used to create customer-targeted advertising campaigns and improve marketing effectiveness.

Finance: MIT technologies play a major role in financial analysis and risk management. Banks and financial institutions use MIT to assess credit, assess risk for investors, and forecast financial markets. For example, by analyzing credit history, it is possible to predict whether a loan application will be successful or unsuccessful.

Healthcare: In medicine, MIT helps predict patient health, optimize treatment plans, and quickly diagnose diseases. New discoveries are being made in the analysis of medical images, the development of personalized treatments based on genetic data, and disease prevention using artificial intelligence.

Transportation and Logistics: MIT is also used to optimize transportation systems. In the automotive industry, MIT technologies are used, especially in the development of driverless vehicles, traffic flow analysis, and the optimization of freight transportation processes.

Industry and Manufacturing: MIT is used to analyze and optimize industrial production processes. Machine learning and artificial intelligence algorithms can reduce uncertainties in production processes, optimize energy consumption, and



increase safety. In addition, it can increase the efficiency of maintenance and predict problems that can be solved in advance.

Data intelligence analysis creates the opportunity to effectively analyze data and extract useful knowledge from it using modern technologies. As shown in the stages of development of MIT, technologies and methods are updated every year, helping to make this analysis more accurate and effective. At the same time, MIT is widely used in various fields, making revolutionary changes in many areas, from economics to healthcare. With new technologies and innovations, the application of MIT is expanding further, allowing to achieve effective results in various aspects of life around the world.

References:

1. Esanovna D. B. Modern Teaching Aids and Technical Equipment in Modern Educational Institutions //International Journal of Innovative Analyses and Emerging Technology. – Т. 2. – №. 6.
2. Тошиев А. Э., Даминова Б. Э., Тошиев А. Э. ДБЭ Формирование самаркандской региональной транспортно-логистической системы //Перспективные информационные технологии (ПИТ 2017)[Электронный ресурс]: Междунар. науч.-техн. конф. – 2017. – С. 14-16.
3. Даминова Б. Э. СОДЕРЖАНИЕ ПРОФЕССИОНАЛЬНОГО ОБРАЗОВАНИЯ И ТЕНДЕНЦИИ ЕГО ИЗМЕНЕНИЯ ПОД ВЛИЯНИЕМ НОВЫХ СОЦИАЛЬНО-ЭКОНОМИЧЕСКИХ УСЛОВИЙ //Yosh mutaxassislar. – 2023. – Т. 1. – №. 8. – С. 72-77.
4. Даминова Б. Э. и др. ОБРАБОТКА ВИДЕОМАТЕРИАЛОВ ПРИ РАЗРАБОТКЕ ОБРАЗОВАТЕЛЬНЫХ РЕСУРСОВ //Экономика и социум. – 2024. – №. 2-2. – С. 117.
5. Raximov N., Primqulov O., Daminova B. Basic concepts and stages of research development on artificial intelligence //2021 International Conference on Information Science and Communications Technologies (ICISCT). – IEEE, 2021. – С. 1-4.
6. Daminova B. Algorithm of education quality assessment system in secondary special education institution (on the example of guzor industrial technical college)



//International Scientific and Practical Conference on Algorithms and Current Problems of Programming. – 2023.

7. Daminova B. FORMATION OF THE MANAGEMENT STRUCTURE OF EDUCATIONAL PROCESSES IN THE HIGHER EDUCATION SYSTEM //Science and innovation. – 2023. – Т. 2. – №. А6. – С. 317-325.

8. Raximov N. et al. As a mechanism that achieves the goal of decision management //2021 International Conference on Information Science and Communications Technologies (ICISCT). – IEEE, 2021. – С. 1-4.

9. Daminova B. ACTIVATION OF COGNITIVE ACTIVITY AMONG STUDENTS IN TEACHING COMPUTER SCIENCE //CENTRAL ASIAN JOURNAL OF EDUCATION AND COMPUTER SCIENCES (CAJECS). – 2023. – Т. 2. – №. 1. – С. 68-71.

10. Daminova B. E., Oripova M. O. METHODS OF USING MODERN METHODS BY TEACHERS OF MATHEMATICS AND INFORMATION TECHNOLOGIES IN THE CLASSROOM //Экономика и социум. – 2024. – №. 2 (117)-1. – С. 256-261.

11. Рахимов Н., Эсановна Б., Примкулов О. Ахборот тизимларида мантикий хулосалаш самарадорлигини ошириш ёндашуви //International Scientific and Practical Conference on Algorithms and Current Problems of Programming. – 2023

12. Benzerara, M., Guedaoura, H., Anas, S. M., Yolchiyev, M., & Daminova, B. (2024). Advanced Strengthening of Steel Structures: Investigating GFRP Reinforcement for Floor Beams with Trapezoidal Web Openings. In *E3S Web of Conferences* (Vol. 497, p. 02013). EDP Sciences.

13. Daminova B. et al. Electronic textbook as a basis for innovative teaching //International Scientific and Practical Conference on Algorithms and Current Problems of Programming.-2023. – 2023.

14. Student M. D. et al. THE ROLE OF MODERN INFORMATION AND COMMUNICATION TECHNOLOGIES IN TEACHING LESSONS IN MATHEMATICS AND COMPUTER SCIENCE //Экономика и социум. – 2024. – №. 2-2 (117). – С. 88-93.



15. Pant R. et al. Study of produced harmonics in DFIG powered by wind turbines over linear and nonlinear loads //E3S Web of Conferences. – EDP Sciences, 2024. – T. 563. – C. 01006.