Artificial intelligence capabilities classification in business environment

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Abstract: It is assumed that objects of artificial intelligence will increasingly invade social space, rebuild the system of social ties, and this restructuring will affect all areas of human activity. Already, nowadays, our life in many respects depends on the decisions made by artificial intelligence. The article discusses artificial intelligence algorithms that can be used in business. As artificial intelligence becomes more popular, most of the company's employees will need to undergo training to become users of artificial intelligence. They will learn how to use corporate applications based on artificial intelligence, manage data properly and seek help from experts if necessary. The task is to find solutions that will help in the near future to automate routine, template processes. That is tasks that do not require special skills but take the time of qualified employees.

1. Introduction

The problem of creating artificial intelligence, or the "world of thoughts" embodied in a technical device, arose even in the last century. But the successes achieved in the field of computer technology have raised the question of “common sense” of machine thinking before modern researchers. If the technical issue is resolved unambiguously, then with the moral side of the issue much greater difficulties may arise. Abstract Artificial Intelligence (AI) is a technology that is created to support decision making. This technology is widely used in the analysis of financial, engineering and management information. Moreover, the need for data processing and the right to privacy create a situation of moral restraint and serious tension in society. Therefore, the question of the choice of circumstances under which AI will work independently, and under which under the strict control of a person requires developed criteria for assessing the applicability of artificial intelligence technology. As expected, AI objects will increasingly invade the social space, rebuild the system of social ties, and this restructuring will affect all areas of human activity sooner or later. The regulatory dimension must be decisive because moral requirements can even limit technological development, hence the preliminary fixation of socially complex problems is necessary. In our work, we identified the most difficult social practices for formal regulation in moral and ethical terms and tried to predict the classification of AI capabilities.

As for the regulation of justice, the possibility of interpretation, reliability and security, management, system ethics, most managers are well aware that artificial intelligence (AI) can change almost all aspects of doing business and, nevertheless, this does not apply to the services security.
Tractica predicts that annual revenue from enterprise artificial intelligence applications will grow from $7.6 billion in 2018 to $107.3 billion in 2025 [1], and by 2030 the global economy could grow by $15.7 trillion. However, a great number of executives do not know how to implement AI not just as part of individual pilot projects, but throughout the organization as well, where this can give the maximum effect. For example, an analysis of the applicability of existing safety rules in relation to the software functions of the product, which can be modified after it is delivered [2], is necessary.

The approach to AI recommends two options: to increase the utilization of AI or completely abandon it. Leading companies already use AI models to improve the efficiency of decision-making and providing predictive analytics to all the staff. If you have serious intentions of the AI, then you need to formalize your approach and ensure that the necessary competences for replicating and scaling up successful (and not large) projects are available. The global market for artificial intelligence [3] is shown in figure 1.

![Figure 1. Artificial intelligence global market.](image)

2. **Artificial Intelligence Studying Approaches**

Solving the problems of artificial intelligence required scientists to formulate a completely new view of intelligence. They saw the basic principle of solving AI problems in that, simulating artificial intelligence, it must be taken into account that the device will learn by itself when interacting with the outside world, while this is a machine with memory, a system of commands and a program that are laid in from the outside and determine the actions of the machine [4]. As a result, the developers faced the tasks of creating the AI:

- minimizing the bias of data and AI models and the ability to take into account the bias problem when using artificial intelligence;
- the possibility of interpretation, which makes it possible to explain how the AI model makes decisions and the ability to guarantee the accuracy of these decisions;
- reliability and security in order to determine the degree of reliability of artificial intelligence systems and the degree of vulnerability of artificial intelligence systems to attacks;
- management to determine those responsible for the artificial intelligence system and implement appropriate control procedures;
- compliance of artificial intelligence systems with regulatory requirements from the point of view of system ethics.

The solution to design problems is the identification of situations in which artificial intelligence decisions can be challenged when making the right decision. Much attention is paid to the problems of artificial intelligence by Elon Musk [5], an engineer and owner of companies engaged in advanced scientific developments, including the aforementioned Tesla and OpenAI - a company engaged in the development of open "friendly" artificial intelligence. He highlighted the situations of unemployment, distribution of benefits, affiliation, humanity and legal issue.

3. **Business algorithmization**

An interesting fact about AI algorithms, which may surprise business users is that there are not so many such algorithms. One and the same algorithm can solve most business problems for which
artificial intelligence is relevant, so if you successfully implement it in one area of the business, then, as a rule, it can be used in other areas. There are three simplest directions of algorithms. A linear algorithm is the sequential execution of instructions in the strict order of their location (for example, “make a cheese sandwich”). Branching - a sequence of actions in accordance with certain conditions (if there is one condition, then step 1 is performed, if there is another condition, then step 2 is performed). Cyclic algorithms are a sequence of actions that must be repeated several times to achieve a positive result (“checking pears for rotten and not rotten”). Algorithm methods are divided into naive Bayesian classifier, ensemble method, support vector method, decision tree, logical regression, least squares method.

A decision support method based on the use of a tree graph: a decision model that takes into account their potential consequences (taking into account the probability of the occurrence of an event), efficiency, and resource consumption.

For business processes, this tree is made up of a minimum number of questions that require an unambiguous answer - yes or no. Giving answers to all these questions consistently, we come to the right choice. The methodological advantages of the decision tree are that it structures and systematizes the problem, and the final decision is made on the basis of logical conclusions (figure 2).

![Decision Tree Analysis](image)

**Figure 2. Decision tree.**

For example, in any company invoices for payment must be processed. Using AI-based tools that automatically retrieve information even from accounts that are not fully standardized, this process to reduce costs and shorten the processing time for bills can be automated.

Naive Bayes classifiers belong to the family of simple probabilistic classifiers and originate from Bayes theorem, which in this case considers functions as independent (this is called a strict or naive assumption) ones.

Logistic regression is a way of determining the relationship between variables, one of which is categorically dependent and the others are independent. For this, the logistic function (accumulative logistic distribution) is used. The practical significance of logistic regression is that it is a powerful statistical method for predicting events, which includes one or more independent variables.

SVM and its modifications help to solve such complex machine learning tasks as DNA splicing, determining a person’s gender from photographs, and displaying advertising banners on websites.

It is based on machine learning algorithms that generate many classifiers and separate all objects from newly received data based on their averaging or voting results. Initially, the ensemble method was a special case of Bayesian averaging, but then it became more complicated and was overgrown with additional algorithms:

Yasinitsky L. N. [6] classifies artificial intelligence systems according to the following areas:

- Systems based on knowledge.
V.N. Bondarev, F.G. Ade [7] consider the following aspects as the main areas of research in artificial intelligence:

- Presentation of tasks and search for solutions.
- Proof of the theorems.
- Presentation of knowledge.
- Expert systems.
- Training and identification of patterns.
- Communication in a natural language.
- Pattern recognition.
- Computer vision.
- Programming languages of artificial intelligence systems.

AI components can also be modified and used to speed up other processes that also process large volumes of unstructured and semi-structured data, for example, in such areas as customer service, marketing, taxes, supply chain management.

The goal is to create a portfolio of reusable structural elements to ensure a quick return on investment and scale up. The company managers interviewed adhere to the following strategy: they consider the development of AI models and corresponding data sets that can be used throughout the organization as the most important competency and priority for 2019.

When experts in the field of artificial intelligence are involved in the development of initiatives, they sometimes can hardly manage to get support from a wider range of people in the company. When projects are offered by business, they can provide for only limited use of such technology capabilities. In both cases, the work of isolated teams can be doubled or taken conflicting actions.

As it was predicted last year, professional training for non-AI professionals aimed to teach them how to work with artificial intelligence has become an important element of HR strategy. A new category of tools (including automatic machine learning (AutoML)) that optimize and automate part of the process of creating artificial intelligence models leads to the democratization of AI. According to the survey, 38% of executives will focus on artificial intelligence for business. The development of this competency is the second priority area after the formation of a set of data and reusable models.

However, the design of an AI-friendly, user-friendly solution remains a daunting task. Even those representatives of business units who have completed basic training cannot always fully understand the various parameters and performance levels of AI algorithms. Such workers may accidentally apply the wrong algorithm, which will lead to unplanned results.

It is possible to cope with this complexity by means of the personnel strategy, which provides for three levels of qualification in the AI field and creates conditions for the successful cooperation of specialists of all three levels.

A more specialized group (possibly 5–10% of employees) must take additional training to work as developers: business line specialists from among confident users who can create use cases and data sets and work closely with AI specialists within the frame of new applications development based on artificial intelligence.
Finally, a small but very important group of engineers and data mining specialists will do the complex job of creating, deploying, and managing AI applications. Through continuing education programs, users and developers can be trained, but experienced programmers and data mining specialists will probably have to be hired.

4. Conclusion
Artificial intelligence will lead to changes in almost all aspects of business and markets. This is sufficient reason to get started, but this is not a reason to take on everything and act too fast. If everything is done correctly, the development of an AI model for one specific task can increase the efficiency of the current process or solve a clearly formulated business problem, creating the conditions for scaling the solution in other divisions of the company as well.

This is a great job not only for programmers and engineers, but also philosophers, lawyers, economists and biologists. Some problems already seem nearly to be solved, and some will have to be worked on a lot.

The result will influence social life and become a legacy for ancestors. It is likely that many critical mistakes will be made. According to the last year forecasts, the number of companies wanting to raise the veil of secrecy over the AI and improve the transparency, interpretability and provability of the decisions taken by artificial intelligence will increase in future. Companies will also need to predict the terms of the audit algorithms. In the future, some governments are expected to increase the level of interpretability of regulatory requirements.

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