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Editorial

Contribution of Creative Mathematicians in the Development of Machine Learning

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Machine Learning and Deep Learning are two areas in Computer Science that are expanding and are increasingly finding applications in solving the real problems of the industry. They are related to developing the ability to "learn" computers without prior explicit programming, but rather a conceptually inverse process is already taking place, in which the machine uses a huge amount of data and recognizes laws due to which certain processes occur. Machine learning relies on so-called models, which represent a wide range of mathematical functions that originally belong to different mathematical disciplines, such as algebra, mathematical analysis, probability, and statistics, or discrete mathematics. And all this is simplified through various computer software and tools.

Key advances in the application of machine learning occur when a step forward is made in mathematics on which it directly relies. That is why the contribution of scientific research in this field is immeasurable because the scope of the machine's services depends on the creative contribution of mathematicians and programmers. Python is one of the most popular programming languages for this task and it has replaced many languages in the industry, and the main reason for that is special built-in libraries that have very useful and well-organized documentation. Python libraries that are used in machine learning are *Numpy*, *Scipy*, *Scikit-learn*, *Theano*, *TensorFlow*, *Keras*, *PyTorch*, *Pandas*, *Matplotlib*. So, combining them enables us to analyze describe, make documentation, and notice and create new conclusions and predictions using a lot of data that are not initially in obvious relations.

Ensemble techniques are a type of machine learning methodology that integrates numerous base models to create a single best-fit predictive model. Ensemble learning is a technique for resolving difficult computational intelligence challenges. To achieve predictive efficiency, ensemble methods implement various machine learning algorithms. Ensemble learning is used to enhance the classification outcome, prediction value, function approximation in the problem, etc. based on the model's performance, or reduce the likelihood of poor model data. An optimized selection of parameters is used to improve the better performance of the algorithm.

In reality, analyzing the results of the application of different methods, mathematicians see some new dependencies and thus are encouraged to find a theoretical basis for these results. And in this causality lies the beauty of the bond of science and its application. We can be proud of the results and benefits of machine learning in modern medicine [1], biometrics [2, 3], digital marketing and business, cryptography [4, 5], and especially in the field of multidisciplinary [6], but we hope that it will through the joint efforts of scientists find application in many other areas and that it will be automated, accessible, and standardized, all with the aim of better efficiency and effectiveness, and increasing the quality of life of people.

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