Applications of Machine Learning and Soft Computing Techniques in Real World

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(**Short Communication**)

Machine learning techniques are the most widely used methods in these days. It is considered to be a branch of artificial intelligence. Machine learning algorithms construct a computational model based on sample data, known as 'training data,' to make forecasts or predictions without being formally programmed to do so. Most of the machines learning techniques are based upon the computational statistics. Soft computing facilitates the implementation of methodologies that seek to design he solutions of real-life problems that are hard to model otherwise. Soft computing techniques are the blending of distinct methodologies (fuzzy logic, bio-inspired, swarm-intelligence, deep learning techniques) that were designed to solve multifaceted real-world problems [4][5]. The aim of this short communication is to highlight the use of machine learning and soft computing techniques in real life applications.

Some of the important machine learning techniques are supervised learning, unsuperverised learning, semi-supervised and reinforcement machine learning techniques. Supervised learning techniques are also known as classification techniques. Supervised learning is a model of learning that despite of unforeseen instance of data helps in making prediction. Unsupervised learning techniques helps in solving the clustering related problems. Reinforcement machine learning is a technique that enables an agent to learn in an interactive environment by trial and error using feedback from its behaviour and observation. Although both supervised and reinforced learning employ mapping between input and output, unlike supervised learning where reinforcement granted to the agent is the right set of ideas to execute a task, reinforcement learning uses encouragement and retribution as signs of positive and negative behavior. Reinforcement learning is distinct in terms of expectations as opposed to unsupervised learning. If the aim in unsupervised learning is to identify parallels and discrepancies between data points, the aim in reinforcement learning is to identify an effective pattern for behavior that will optimize the agent's overall cumulative reward.

These machine learning (supervised, semi-supervised, unsupervised and reinforcement) techniques have been widely used to solve different real world problems. These techniques have been effectively used in fraud detection[6][7][8], banking [9][10], marketing[11][12][13], customer relationship management[14][15][16], disease diagnosis[17-23], stock analysis[24][25][26], opinion mining[27-31], education[31-34], manufacturing engineering [35][36], intrusion detection[37-39],

query optimization[40-43], customer segmentation[44-46], feature selection[47-51], bio-informatics [52-53], insurance [54][55], medicine[56-57], telecommunication[58][59], and web mining[60][61].

It has been observed that both machine learning and soft computing techniques have been used in wide area of applications. Nowadays, the use of hybrid approach of supervise, unsupervised, reinforcement and soft computing (fuzzy logic, bio-inspired, swarm-intelligence, artificial neural network and deep learning techniques) has been increased. In spite of the several areas, there are still some area where the use of these techniques is required.

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