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SUPPORT VECTOR MACHINE ALGORITHM AND IT'S USE CASES IN THE REAL-WORLD APPLICATIONS

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Abstract-In this paper, we overview the Support Vector Machine learning algorithm. Moreover, we are considered the applications in which is used Support Vector Machine learning algorithm.

Key words- SVM, Supervised, Machine learning, Classification, Regression, Application, Algorithm.

Support Vector Machine (SVM) is a supervised machine learning algorithm capable of performing classification, regression and even outlier detection. The linear SVM classifier works by drawing a straight line between two classes. All the data points that fall on one side of the line will be labeled as one class and all the points that fall on the other side will be labeled as the second. Sounds simple enough, but there's an infinite amount of lines to choose from. This is where the SVM algorithm comes in to use in order to determine know which line will do the best job of classifying the data. The SVM algorithm which is illustrated in figure 1 will select a line that not only separates the two classes but stays as far away from the closest samples as possible. In fact, the "support vector" in "support vector machine" refers to two position vectors drawn from the origin to the points which dictate the decision boundary.

We can show following as advantages of applying SVM for controlling chaotic systems.

- Allows use of relatively small parameter algorithms to redirect a chaotic system to the target.
- Reduces waiting time for chaotic systems.
- Maintains the performance of systems.

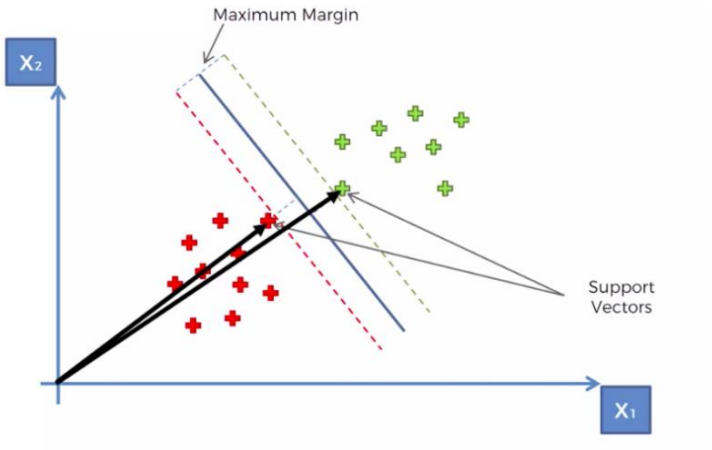

Figure-1. Below we widely *overview* each application in which is using SVM algorithm.

SVM is used in the based GPC to control chaotic dynamics with useful parameters. It provides excellent performance in controlling the systems. The system follows chaotic dynamics with respect to the local stabilization of the target.

SVMs is using for geo (spatial) and spatiotemporal environmental data analysis and modeling series.

Moreover, we can also use SVMs to recognize hand-written characters that use for data entry and validating signatures on documents.

Protein remote homology detection is a key problem in computational biology. **Supervised learning algorithms** on SVMs are one of the most effective methods for remote homology detection. The performance of these methods depends on how the protein sequences modeled. The method used to compute the kernel function between them.

In the field of computational biology, the protein remote homology detection is a common problem. The most effective method to solve this problem is using SVM. In last few years, SVM algorithms have been extensively applied for protein remote homology detection. These algorithms have been widely used for identifying among biological sequences. E.g. classification of genes, patients on the basis of their genes, and many other biological problems.

SVMs can classify images with higher search accuracy. Its accuracy is higher than traditional query-based refinement schemes.

SVM allows text and hypertext categorization for both types of models; inductive and transductive. It uses training data to classify documents into different categories such as news articles, e-mails, and web pages

It classifies the parts of the image as face and non-face. It contains training data of n x n pixels with a two-class face (+1) and non-face (-1). Then it extracts features from each pixel as face or non-face. Creates a square boundary around faces on the basis of pixel brightness and classifies each image by using the same process.

We conclude that the SVMs can not only make the reliable prediction but also can reduce redundant information. The SVMs also obtained results comparable with those obtained by other approaches.

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ПРОГРАММНЫЕ СРЕДСТВА ИНТЕНСИВНОГО РАСЧЕТА И ПРОГНОЗИРОВАНИЯ СОСТОЯНИЯ ВОЗДУШНОЙ СРЕДЫ ПУТЁМ WEB ИНТЕРПРЕТАЦИИ.

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Аннотация: Разработано программно-алгоритмическое обеспечение для интерполирования данных о загрязнении атмосферы, получаемых в режиме реального времени со стационарных и мобильных станций контроля. Интерполирующая модель строится на основе компьютерной матричной сети базовых функций. Представлена структура использованной моделированной сети матрицы. Описан порядок настройки и обучения сети с целью получения результатов, содержащих наименьшую ошибку расчёта. Результаты интерполирования представляются конечному пользователю в виде полей распределения индекса качества воздуха на карте местности. Сформулированы ограничения и преимущества описанного программного обеспечения и направления дальнейших исследований и разработок.

Ключевые слова: интеллектуальные датчики, программное обеспечения, регионы Хорезмской области, метрологическая измерения датчиков, обобщения существующих данных и анализов по баз данных.

Задача оценки экологической обстановки стоит достаточно остро для крупных местах с высоким уровнем интенсивности потоков