Insight- Research on Intelligent Planning and Scheduling Method Based on Big Data by using machine Learning algorithm with R

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Abstract: -

In Today's environment Artificial Intelligence Safe, efficient, and sustainable operations and control are primary objectives in industrial manufacturing processes built the model of an any intelligent system producing system driven by huge information attracted increasing attention of the people human intervention, thereby showing apparent limitations in practice. Machine Learning algorithm with using R will visualize a lot of hidden information within the method of feature extraction of the domain adaptation. This paper expounds the outstanding performance of machine learning on inbuilt mtcars dataset in intelligent producing system modeling, that provides a good manner and powerful tool for intelligent producing system style, performance analysis, and running standing observance and provides a transparent direction for choosing, designing, or implementing the machine clearning design within the field of intelligent producing system modeling and programming. In this paper the KNN or k-nearest neighbors algorithm is one of the simplest machine learning algorithms and is an example of instance-based learning, where mtcars dataset are classified based on stored, labeled instances.

Keyword: -Machine Learning Algorithm, KNN algorithm

Introduction

Over the years, people have conducted extensive research on the application technology of artificial intelligence in a manufacturing system. As a result, a variety of expert systems and knowledge-based systems for specific fields have been developed, forming a series of "intelligent arc islands" [1]. With the deepening of research, people gradually realize that the future manufacturing automation should be intelligent integration and the further improvement of manufacturing automation depends on the self-organization ability of the whole manufacturing system [2]. The intelligent manufacturing system can be regarded as a complex system composed of various intelligent subsystems or intelligent nodes.

Related Work:

The scheduling of the intelligent manufacturing system should integrate intelligent scheduling of part processing and intelligent planning of product assembly, which is suitable for intelligent scheduling of any kind and quantity of products and resources[1]. This paper expounds the outstanding advantages of deep learning in intelligent manufacturing system modeling, which provides an effective way and powerful tool for intelligent manufacturing system design, performance analysis, and running status monitoring and provides a clear direction for selecting, designing, or implementing the deep learning architecture in the field of intelligent manufacturing system modeling and scheduling.

[2]This paper purpose combines the ability of deep learning (DL) and transfer learning (TL). A sample database containing all ten cloud types was used; this database was expanded four-fold using enhancement processing. AlexNet was chosen as the basic convolutional neural network (CNN), with the ImageNet database being used for pre-transfer. The optimal method, once determined by layer-by-layer fine-tuning, was used to test the classification effects for ten cloud types. The proposed method achieved 92.3% recognition accuracy for all ten ground-based cloud types. [3] This paper proposes a deep learning-based artificially intelligent system that can quickly train and identify faulty images. For this purpose, a pretrained convolution neural network based on the PyTorch framework is employed to extract discriminating features from the dataset, which is then used for the classification task. In order to eliminate the chances of overfitting, the proposed model also employed Dropout technology to adjust the network. +e experimental study reveals that the system can precisely classify the normal and defective images with an accuracy of over 91%. [4] The adaptive sampling method performs much better than existing sequential sampling methods and that the finite element-based ML model can be used to achieve improved prediction accuracy for chip package design optimization.

[5]This paper a PSMS can therefore be regarded as a huge cyber-physical system with the cyber part being the platform and the physical part being the corresponding physical manufacturing system. A significant issue for a PSMS is how to optimally schedule the aggregated resources. Multi-agent technology provides an effective approach for solving this issue. In this paper we propose a multi-agent architecture for scheduling in PSMSs, which consists of a platform-level scheduling multi-agent system (MAS) and an

enterprise-level scheduling MAS. Procedures, characteristics, and requirements of scheduling in PSMSs are presented. A model for scheduling in a PSMS based on the architecture is proposed. [6] The ANNs are quite flexible for adaption to different type of problems and can be custom-designed to almost any type of data representations. The warning, however, should be issued here to the reader not to go over-excited upon a new tool just because it is new.

Experiment with R programming

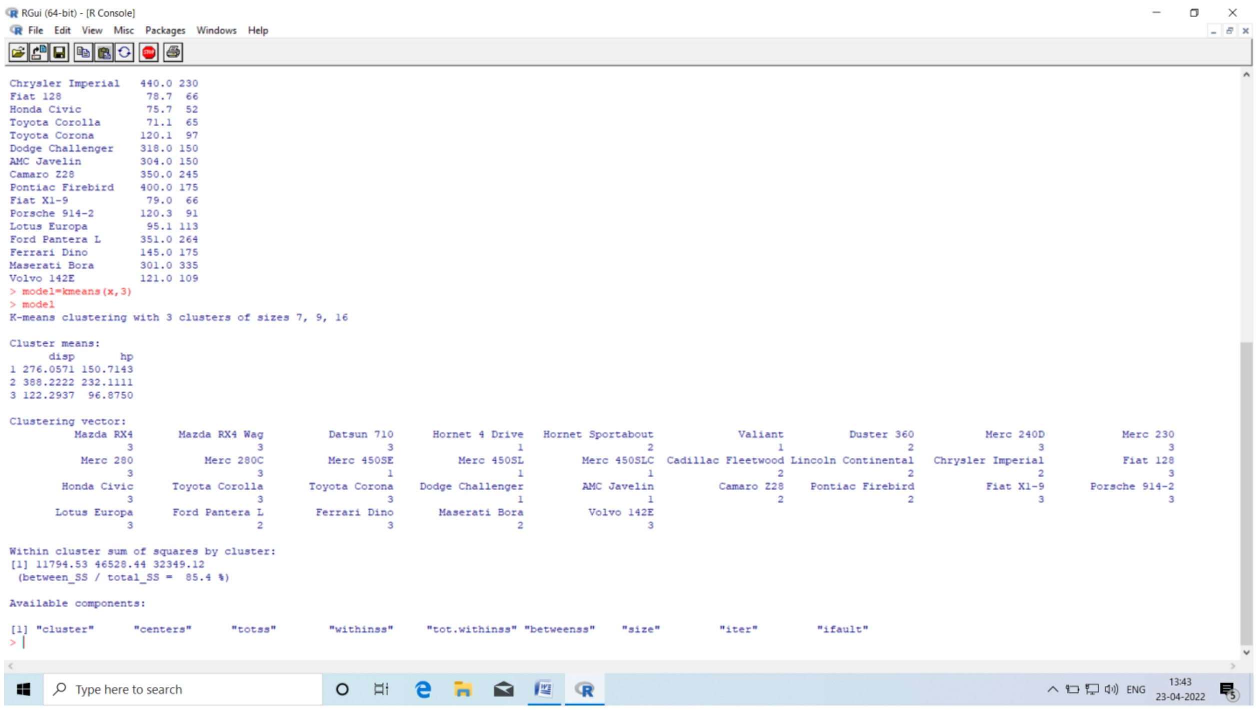
The KNN or *k*-nearest neighbors algorithm is one of the simplest machine learning algorithms and is an example of instance-based learning, where new data are classified based on stored, labeled instances.

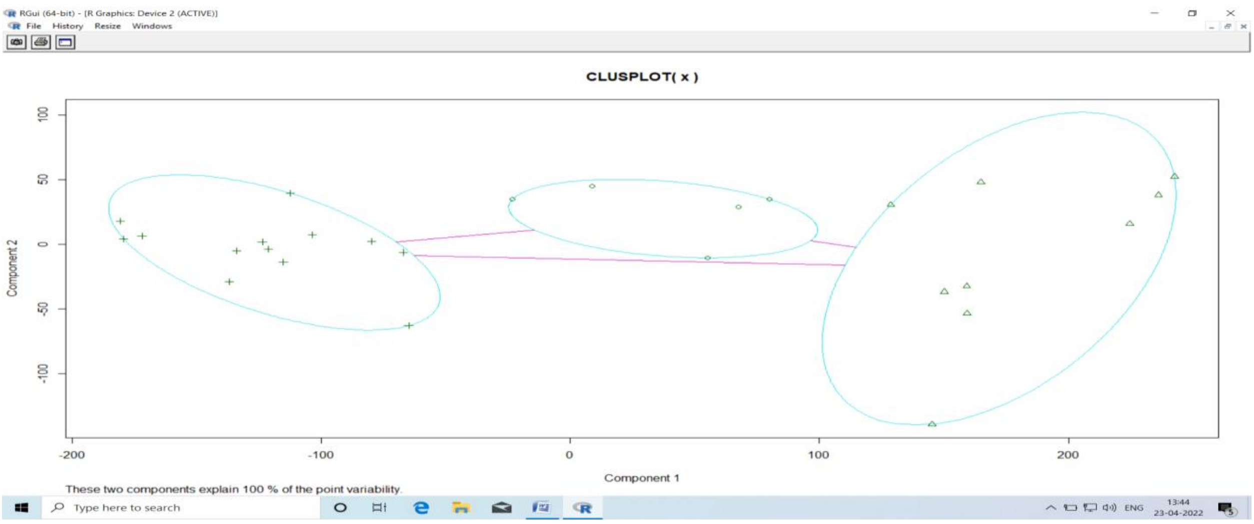
More specifically, the distance between the stored data and the new instance is calculated by means of some kind of a similarity measure. This similarity measure is typically expressed by a distance measure such as the Euclidean distance, cosine similarity or the Manhattan distance.

In other words, the similarity to the data that was already in the system is calculated for any new data point that you input into the system.

Then, you use this similarity value to perform predictive modeling. Predictive modeling is either classification, assigning a label or a class to the new instance, or regression, assigning a value to the new instance. Whether you classify or assign a value to the new instance depends of course on your how you compose your model with KNN.

The *k*-nearest neighbor algorithm adds to this basic algorithm that after the distance of the new point to all stored data points has been calculated, the distance values are sorted and the *k*-nearest neighbors are determined. The labels of these neighbors are gathered and a majority vote or weighted vote is used for classification or regression purposes.





In other words, the higher the score for a certain data point that was already stored, the more likely that the new instance will receive the same classification as that of the neighbor. In the case of regression, the value that will be assigned to the new data point is the mean of its *k* nearest neighbors.

Conclusion

Traditional manual scheduling methods can no longer meet the requirements of intelligent manufacturing systems and complex manufacturing systems. The modern manufacturing industry is facing the requirements of individuation and diversification and the phenomenon of a shorter and shorter product cycle,which requires the product design and process design to be coordinated. The scheduling of intelligent processing units in the intelligent manufacturing system should integrate intelligent scheduling of part processing and intelligent planning of product assembly, which is suitable for intelligent scheduling of any kind and quantity of products and resources. With the help of machine learning algorithm gives the outstanding performance on inbuilt mtcars dataset. in intelligent producing system modeling, that provides a good manner and powerful tool for intelligent producing system style, performance analysis, and running standing observance and provides a transparent direction for choosing, designing, or implementing the machine clearning design within the field of intelligent producing system modeling and programming.

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