Research on the Establishment and Use of a Fraud Prevention Financial Platform for College Students Based on the Background of Computer Big Data

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Abstract. This paper combines Augmented Reality (AR) and CAD to create a live interactive mapping space (AR computer-aided design system) that integrates reality and reality to improve designers' understanding of the real environment and reduce uncertainty in the design process. With the development of communication network technology, people's requirements for the quality of telecommunication services are also increasing, and the challenges for telecommunication services are becoming greater. People are not satisfied with the previous demand for "usable" telecom services, but are more inclined to refinement, personalization and quality. This paper analyzes and studies the data on the basis of big data, visualizes the fraud platform, and provides an effective reference and basis for further fraud prevention work.

Keywords: Big data · Fraud prevention · Financial platforms · Computers

1 Introduction

At present, this development momentum and after the application of industry for artificial intelligence shows that the application of artificial intelligence algorithms to various fields has not been unattainable [1]. This momentum and subsequent industrial applications of AI show that the application of AI algorithms to various fields is not an unattainable future goal [2], but a real trend that is having a significant impact on various fields, and because AI and deep learning have only just emerged in the past few years, there are still many areas where deep learning does not have many applications [3].

2 Representation of Three-Dimensional Solid Objects

2.1 Representation of a Cube

The cube is one of the basic geometries and is the main element when modeling parts such as boxes, slides, bases, etc. [4]. When modeling the cube, the system will take the three-dimensional coordinates of the user's device at the time of triggering the command

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as the cube size parameters, and obtain four coordinate points in turn as coordinate $A(x_0, y_0, z_0)$, $B(x_1, y_1, z_1)$, $C(x_2, y_2, z_2)$, $D(x_3, y_3, z_3)$, point A as the center coordinate of the cubic ground rectangle is also the local coordinate of the cube, |AB| two coordinate distance as one-half of the rectangle side length L_1, |BC| two points as one-half of the rectangle side length L_2, as shown in Fig. 1, and display it in the AR environment (Fig. 2).

$$L_1 = 2|AB| = \sqrt[2]{(x_0 - x_1)^2 + (y_0 - y_1)^2 + (z_0 - z_1)^2}$$

$$L_2 = 2|BC| = \sqrt[2]{(x_1 - x_2)^2 + (y_1 - y_2)^2 + (z_1 - z_2)^2}$$

According to the three points A, B, C can determine the cube plane equation, from the three points do $\overline{AB}(x_1 - x_0, y_1 - y_0, z_1 - z_0)$, $\overline{BC}(x_2 - x_1, y_2 - y_1, z_2 - z_1)$ two normal vectors perpendicular vector, and determine the plane normal vector $\vec{n}$ as:

$$\vec{n} = \overline{AB} \cdot \overline{BC} = \begin{vmatrix} i & j & k \\ x_1 - x_0 & y_1 - y_0 & z_1 - z_0 \\ x_2 - x_0 & y_2 - y_0 & z_2 - z_0 \end{vmatrix} = ai + bj + c$$

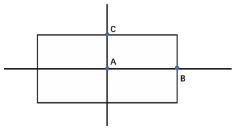

Fig. 1. Bottom surface acquisition.

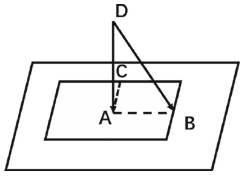

Fig. 2. Point to surface distance.

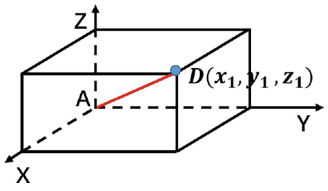

Fig. 3. Distance between two points in space

2.2 Representation of Cylindrical Bodies

Firstly, through the system trigger when the coordinate position of the device in turn to obtain three coordinate points for the coordinates $A(x_0, y_0, z_0)$, $B(x_1, y_1, z_1)$, $C(x_2, y_2, z_2)$, A point as the center of the circle coordinates of the cylindrical bottom surface is also the local coordinates of the cylinder, |AB| two coordinates distance as the radius of the cylinder bottom surface R, as shown in | A point as the center of the circle coordinates of the cylindrical bottom surface is also the local coordinates of the cylinder, |AB| two coordinates distance as the radius of the cylinder bottom surface R, as shown in | A point as the center of the circle coordinates of the cylindrical bottom surface is also the local coordinates of the cylinder, |AB| two coordinates distance as the radius of the cylinder bottom surface R, as shown in Fig. 3, C point distance from the bottom circular plane as the height of the cylinder H.

$$R = |AB| = \sqrt{(x_0 - x_1)^2 + (y_0 - y_1)^2 + (z_0 - z_1)^2}$$

Since the cylindrical bottom surface is determined by only two points, it is different from the cube in determining the bottom datum and cannot use the three-point formula to determine the plane, so when modeling the cylinder, its bottom circular datum is perpendicular to the camera direction when triggering the B point, i.e. the generated bottom datum is generated facing the camera and will be displayed in the AR environment, the circular equation is:

$$(x - x_0)^2 + (y - y_0)^2 = R^2$$

2.3 Representation of the Sphere

A point as the sphere's spherical center coordinates is also the sphere local coordinates, |AB| two coordinate distance as the sphere's ball radius R, and will be displayed in the AR environment.

$$R = |AB| = \sqrt{(x_0 - x_1)^2 + (y_0 - y_1)^2 + (z_0 - z_1)^2}$$

The sphere with center at the origin and radius R is defined as the set of points (x, y, z) satisfying the equation, and since the point A serves as the center of the sphere in local coordinates, the sphere is considered in local coordinates as a sphere with the origin as the center, so the equation is:

$$x^2 + y^2 + z^2 = R^2$$

2.4 Heap Sort

The structure of heap can be divided into big root heap and small root heap according to the value of its nodes [5]. In big root heap, the left and right branches of each node are smaller than the value of that node, while the opposite is true for small root heap,

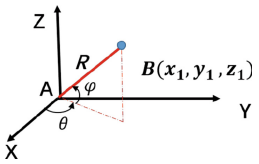

Fig. 4. Coordinate parameterization.

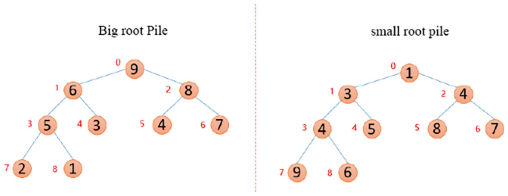

Fig. 5. Structure of the heap

Fig. 6. Heap sort 1.

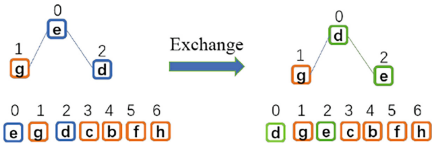

Fig. 7. Heap sort 2

as shown in Fig. 5. Heap structure is a binary tree structure, and heap sort is a sorting method designed according to the data structure characteristics of heap [6] (Fig. 4).

Suppose the tangent values of the seven points of b, c, d, e, f, g and h are connected in decreasing order. Firstly, bits 0–1 are sorted in the array, and the maximum value is placed at the top of the heap, as shown in Fig. 6. e in 0–1 is the maximum value and is the top of the heap [7].

The subsequent values are then added to the binary tree in turn, with d in 0–2 swapped for the top of the heap, as shown in Fig. 7.

3 System Testing

3.1 Test Environment

The data of this system is stored on redis, mysql, file system and hdfs respectively [8]. The version numbers of each software system for the development and deployment environments are shown in Table 1:

Table 1. Deployment environment version correspondence

Software or System	Version number
Ubuntu	14.04
Spark	1.6.1
Hadoop	2.4.1
Python	3.5
MySQL	5.5
Tensorflow	1.4.0
Threadpool	1.3.2
uvloop	0.9.1

4 Conclusion

The anti-fraud system for telecom fraud provides users with a full set of solutions integrating speech recognition, speaker classification, and fraud classification to identify anti-fraud telecom calls [9], and the system can provide interfaces for batch data processing and analysis, thus adapting to various online environments. For the scenario of huge data volume, HDFS is chosen to store and manage the huge amount of recording files, and distributed tensorflow is chosen to perform cluster graphics computing, thus accelerating the model discrimination process and maintaining short latency and high success rate throughout the process [10].

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