Shourav Part:

*Good morning, ma'am and to all my mates. I am Shourav Dev from CSE Dept. Group 5. * Before starting my presentation, I was wondering about one thing does anyone know my starting word * "good morning" can be used to make quite well amount of money.

*I am pretty sure most of you have heard this for first time. Right! And for gathering *this kind of data, data mining and the use of calculus is influential. Now *what is data mining and what is calculus and also what is the use of calculus in data mining.

*So here again, I am shourav dev with *my group mate Mahbub Hasan and Shaikat Islam Shuvo. And today we are going to give a *presentation on the application of calculus in data mining.

*Let's start with the data mining. For that*let me introduce you to someone* Say hi to Simran and *take a look in her bedroom. This is her bedroom. * But she wants to redecorate her room. *As determined, she redecorated her room by a designer. *But oho now she got a problem she doesn't know where her stuffs are located. *So, she asked her little sister to take a tour of her room and make a list where her necessary stuffs are located.

*Here the room we saw after redecoration is comparable against a big chunk of unknown data and making the list of necessary stuff location is the data mining from that chunk.

*So ultimately data mining is the process of analyzing a large batch of information to pull out the necessary data. Now I Hope that you guys got an idea about data mining.

*Then let's forward to the calculus. The word Calculus comes from Latin language meaning "small stone". Because it is like understanding something by looking at small pieces. Or we can say a calculus is the mathematical study of continuous change. *Calculus stands on its two pillars. * Differential Calculus & Integral Calculus.

*So, what is Differential Calculus & Integral Calculus.

*Differential Calculus is a mathematical term which cuts something into small pieces to find how it changes.

*Where Integral Calculus is a mathematical term which joins the small pieces together to find how much there is. I think now we also know the calculus as well. *Now it's time for the application of calculus in data mining. *Why not hear it from Mahbub.

Mahbub Part:

Thank you shourav. So before knowing about the application of *calculus let's take a look on gradient descent.

*Now what is gradient descent?

*Suppose you have a marvel and a bowl. No matter wherever you slide the marvel in the bowl, it will eventually land in the bottom of the bowl.

*As you see this marvel follows a path that ends at the bottom of the bowl. We can also say that the marvel is descending in the bottom of the bowl. As you can see from the image the red lines are gradient of the bowl and the blue line is the path of the marvel and as the path of the marvel's slope is decreasing, *it is called as gradient descent.

*Let's understand it more closely,

Consider we have a dataset of users with their marks in some of the subjects and their occupation. Our goal is to predict the occupation of the person with considering the marks of the person.

In this dataset we have data of * John and Bear. With the reference data of john and bear we have to predict the profession of *Chang.

*Now think of marks in the subject as a gradient and profession as the bottom target. You have to optimize your model so that the result it predicts should be accurate. Using John's and Bear's data

We will create gradient descent and tune our model such that if we enter the marks of john then it should predict result of doctor in the bottom of gradient and same for bear. *This is our calculated model. Now if we give marks of subject to our model then he will analyze the data and pick the necessary one and optimize it to predict the profession. *that's where data mining and calculus come together.

*Right Shuvo,

Shuvo Part:

absolutely Mahbub.

*Because for using gradient descent we need to use differential and integral. *Dividing the bowl into the red path or dividing the marks based on subject and observing the change is differential calculus.

*Other side connecting all bowl part or all marks and optimizing the data is integral.

*You guys remember Simran. *Who got a beautiful room designed? *Dividing Her necessary stuff from the room and observing the change is differential and combining all stuff location and optimizing is the integral.

*In data mining there is another use of calculus in *multivariate statistical analytics (using vector calculus), and also for working with *continuous statistical distributions.

*Why not take a recap. At here we find out *about data mining, calculus, also met with Simran and most importantly application of the calculus in datamining.

*Sir Jhon von Newman once said, “The calculus was the first achievement of modern mathematics and it is difficult to overestimate its importance."

*Thank you so much for staying with us that long but before closure now we want to know from our mates that how much priority will you give calculus in datamining?

Important:

* The following key hit on the keypad will initiate next process. one pressing.