AREA CALCULATION: DONT MEASURE 05

Hello all, welcome to the programming screen cast of area calculation so first of all let me explain you how are we going to calculate the area of Punjab given area of India and how can we apply the method explained in the previous video here in python. So as you can see we have been given an image here in this image we have map of India in which the Punjab region has different colour and the rest of the region of India has different colour so please think about it how can we implement this using the method explain in the precious videos, now you are aware of this fact that you can find the rgb value of the image i hope that you are aware of this fact that you can find the rgb values of the image using python as well as the colour picker application any where available anywhere on the internet so as you see we have two different colours here so if i start putting random dots here i can find out which dots are placed in the Punjab region and which dots are placed in the India region, how can you find that? If the rgb value of the particular c and y coordinate is different is corresponding to this greyish part that means it is it lies in the Punjab region as well as if the dots that are placed here correspond to the black region the blackish region that means it lies in the India region so you can calculate the number of dots placed in the Punjab region as well as in the India region so i repeat here how can you do that, first of all you know how to calculate the rgb values of the particular image, so in this particular image we will be having two rgb values one corresponding to the greyish part and one corresponding to the blackish part so what will we do here, we will start putting random dots here will start taking the random x and y values here the corresponding x and y values if they have the rgb values that correspond to the grey colour that means they are present in the Punjab region and if the x and y values that are present in the blackish region and we can calculate the rgb value of that particular region and if it corresponds to the black region that means they are present in the India region so what we need to calculate here is, first of all we need to calculate the rgb value of these two colours of this grey colour and of this black colour and then we need to select the points select the x and y coordinates randomly and corresponding to these x and y coordinates we can calculate numbers of dots placed in the Punjab region and number of dots placed in the India region. So first of all let us calculate the rgb value, so i will be using the easy method here i will be using the colour picker application here as you see i have uploaded the image here so let me check the rgb value of the black region corresponds to sixty, sixty one, sixty and of this grey region corresponds to eighty, eighty one, eighty one so of this black region the rgb value is sixty, sixty one, sixty and of this grey region it is eighty, eighty one, eighty one so using these rgb values let us implement this in python so let me start with that so first of all what you need to do here is you need to import the scipy library here i will write import scipy dot misc i will be explaining you why are we importing this library and as an always we will be importing the image library from pil package so just write import image from pil after that you need to import numpy too i will just write import numpy as np and you also need to import the random so here i will just write import random so we have imported the required libraries now first step that we need to do here is we need to read this image so i will be introducing the new method here using the scipy dot misc library you can import you can read the images so i will just take a variable here img is equal to scipy dot misc dot read and our image name is map zero one dot png don’t worry we will be applying you with this image

we will be posting you this image so you just need to read this image after that you need to keep the track of the count of number of dots present in the Punjab region as well as the India region so i will be taking two variables here first of all it is count underscore Punjab is equal to zero and then count underscore IN that is India that is equal to zero so next what we need to do here is we also need to keep a track of count here you will be getting to know why are we taking count here now i will take a while loop and run it many number of times so that we can get the exact area for example i run it ten thousand number of times as i have already explained in the previous programming screen cast in the previous screen cast that we need to have many iterations here that's why i took ten thousand let us see if this gives the right area or not, after that i need to select x and y variables randomly here what i need to do here is? I need to select x and y variables randomly here for selecting the x and y variables you need to know what is what are the dimensions of the image, yes you need to know what are the dimensions of the image so i will just go to the image and go to the image and try to find out what are its property so we have our image here map zero one dot png so i will just double click here and try to find out what are its properties so we have the image dimensions here that is two four eight one into two seven three six so we have the image dimensions here as two four eight one into two seven three six so according to that we will said the range for randomly selecting x and y values so let us write them in the code so i will just write random dot randint and we have zero comma two seven three five here and y is equal to random dot randint zero comma two four eight zero here two four eight one was their length and two seven three six was the breadth and in python we have the x and y dimensions reversed for example here we had the length has two four eight one but here the x value will the x part will be as two seven three five because it is reversed in python x is taken as the depth one and y is taken as the length one i hope this is clear to you so if this is not clear to you we commonly take x as the horizontal value and y as the vertical value in python it is reversed in case of images so x acts as a y value here x acts as a vertical thing here and y acts as a horizontal thing here so please keep this fact in mind while doing while processes image in python. So we have the x values the y values as we read this image, image scipy dot misc we also have the z dimension here while the z dimension is of no use to us because our image is 2d and it is not 3d so we will just take z is equal to zero here. After that we already know the rgb value of the grey region and of the black region so i will just write if img x y z is equal to is equal to sixty then it corresponds to the India region so i will just increase the counter of India here that is count is equal to count underscore n plus one and i also increase the count here count is equal to count plus one else what do you need to do here is else if the rgb value corresponds to the Punjab region the grey region what we will write here x y z is equal to equal to righty here, so then we need to increase the count of Punjab region so you just write count underscore pun is equal to count underscore pun plus one and you need to also increase the count value, count is equal to count plus one so now we have number of dots placed in the India region number of dots placed in the Punjab region now what you have to do here is, you need to calculate the area of Punjab so we will go by our method i will write area of Punjab is equal to count of Punjab region divided by count of India region into the exact area of India so i will be taking the exact area here and that is three two eight seven three two eight seven two six three, three two eight seven two six three and i will now print this particular variable area underscore Punjab so now let me try to run this and see whether this is giving the right

answer or not and if it is not giving the right answer so will have to check whether increase in number of iterations will help this method or not so i will just run it, we need to save it so i will just write ar dot py let me try to run it so there is some problem here let me try to check it is not read it is basically i am read it is not read basically i am read please note this fact here so i will just try to run it here again so we have the area of Punjab as four eight zero two three but actually the area of Punjab is five zero three six two so there is some error here so let me try to increase the iterations so i will increase the iterations to one lack so let me try to run it again it will take some time because the iterations have been increased so now we have five four zero nine six the error here is less earlier we had around four thousand error now we have around two thousand error so if you keep on running this particular program you will get some value near to the area of Punjab. Ok since it is a randomise method this can't give you the exact amount the exact area but this will give you the area that is very very close to the area of Punjab so we will just run it again let me run it again it is now four nine eight eight nine run it again it is five two three six four oh my god this is very very close to the area of Punjab it is somewhat two thousand it is somewhat two thousand away from the actual value you can check that online, what is the area of Punjab and you can figure out and this is very very close it has only one thousand difference the area of Punjab is basically five zero three six two so it is very very close to this particular value so you must be having the question that why are we getting the different values every time please note the fact that we are calculating we are taking x and y as random values so we don't know the ratio count of Punjab divided by count of India the, we don't know what this ratio will give us so if this ratio is accurate then only the area of Punjab will be accurate so we need to increase the number of iterations so has we get more and more x and y coordinates and we get a clear picture we get the correct value of area of Punjab ok so since this is a randomised method the answer the solution the value would be different for different times for different number of runs so as you keep on running this algorithm you will get different different answers but only but one thing is sure about it that this will give you area that will be very very close to the actual area of Punjab the error would be very very less. I hope this programming screen cast was useful to you guys i will be coming up with another method of how can we calculate this the logic is somewhat same but will be telling you one another method of how can you calculate the area of Punjab if you are given area of India. Thank you.