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Matlab tutorial for BCS 519 stats course

Looking at x y eye traces.

for more basic instruction, checkout https://blog.udemy.com/matlab-tutorial/

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```
clear all
clc
```

Types of Data

```
struct.matrix = [1 2 3; 4 5 6; 7 8 9];
struct.vector = [1 2 3 4 5 6 7 8 9];

%test = struct.matrix * struct.vector;
```

load in data .mat file

```
load tutorialData.mat
```

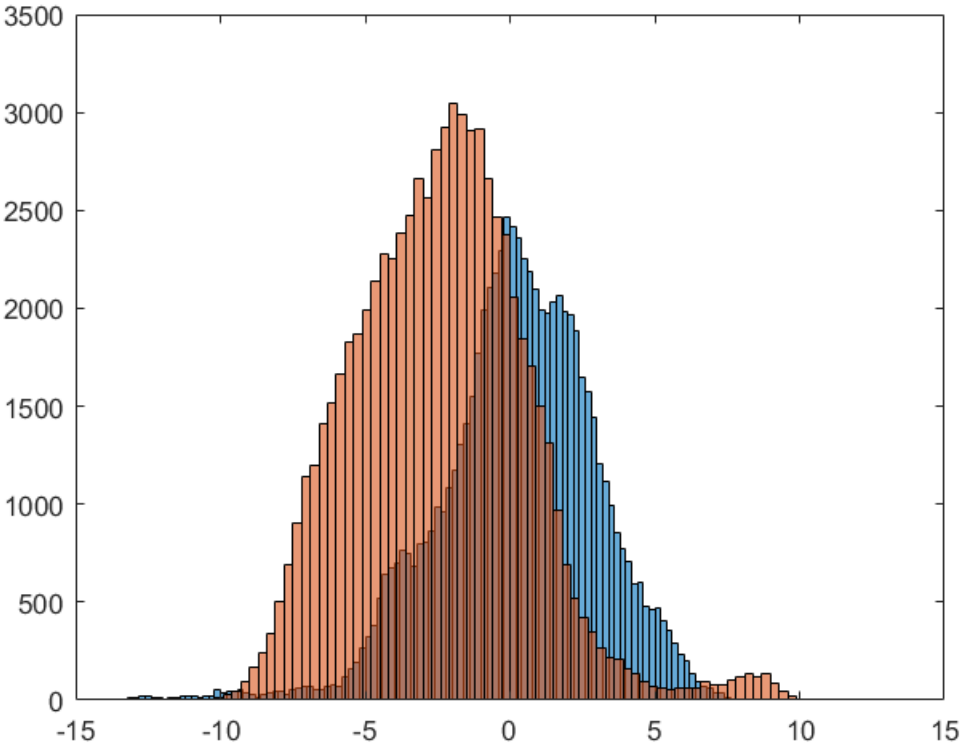
create concatenated vector of all data

```
x = [];
y = [];
for numTrials =
 1:length(data.individualSizeChar.strokeWidth_3.position)
    x = [x
 data.individualSizeChar.strokeWidth_3.position(numTrials).x];
    y = [y
 data.individualSizeChar.strokeWidth_3.position(numTrials).y];
end
```

plot histograms

```
figure;
```

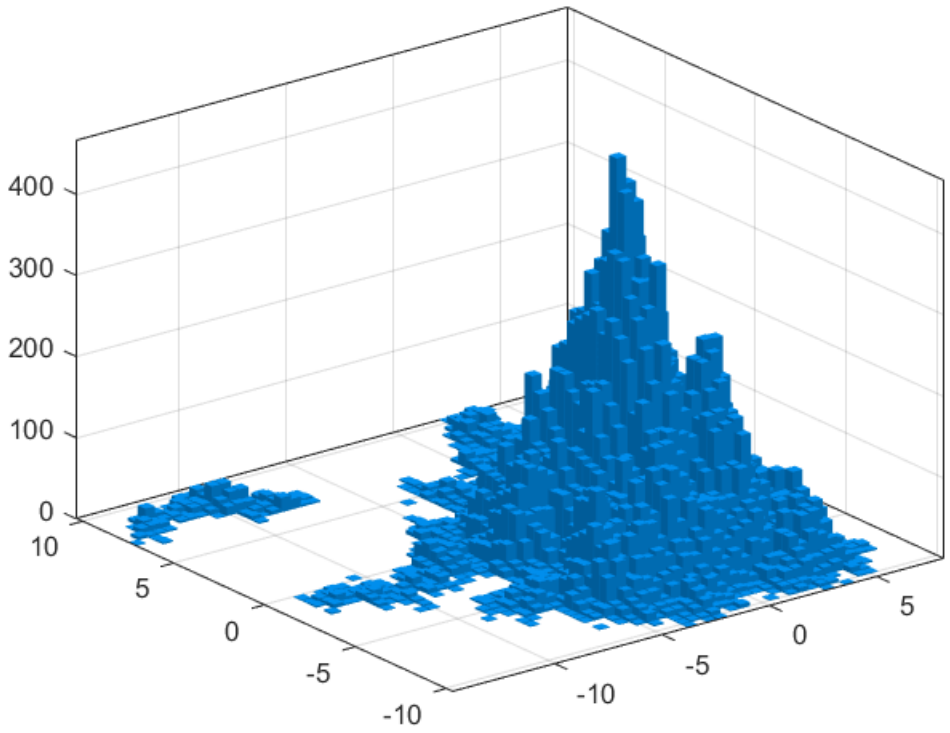
```
histogram(x);
hold on
histogram(y);
```



Create 3D histogram

```
n_bins = 50;
limit.xmin = floor(min(x));
limit.xmax = ceil(max(x));
limit.ymin = floor(min(y));
limit.ymax = ceil(max(y));

figure;
temp = histogram2(x, y, n_bins);
temp2 = temp.Values;
result = temp2./(max(max(temp2)));
```

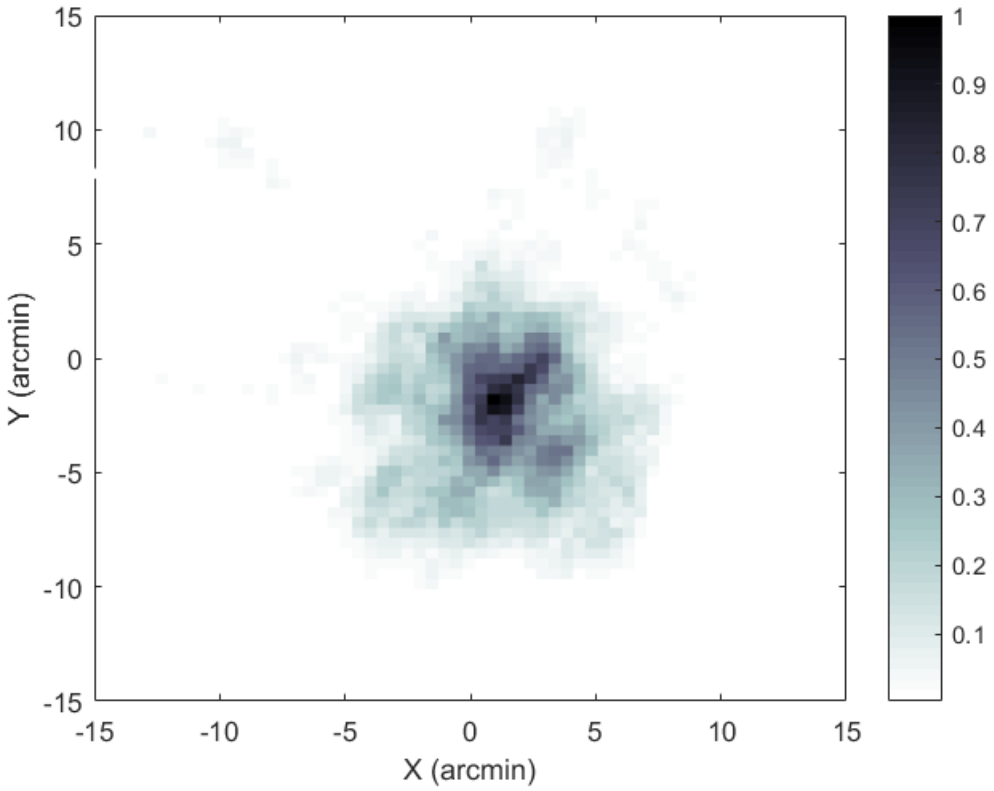


Turn 3D into color histogram

```
figure;
result(result==0)=NaN;
h = pcolor(linspace(limit.xmin, limit.xmax, size(result, 1)),...
       linspace(limit.ymin, limit.ymax, size(result, 1)),...
       result');

colormap(flipud(bone))
set(h, 'EdgeColor', 'none');
axis([-15 15 -15 15]);
hold on

colorbar
xlabel('X (arcmin)');
ylabel('Y (arcmin)');
```



Published with MATLAB® R2017a