# Tutorial 3 – BT 3072

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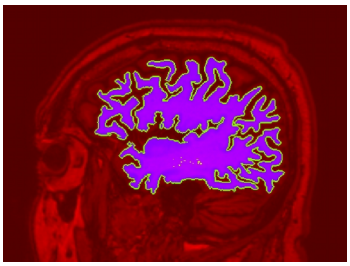
## Basics

1. Load the data1.dat plot and fit a suitable polynomial and give reasons for your selection.(hint: check the optional outputs of fitting)
2. Write your own **Matlab function** to calculate f(x) = sin((π/2)x) + sin((2/5)π*x) in the interval of 0 to 40

## Image processing

1. Implement you own algorithm to do erosion and compare your result with the Matlab internal function.
2. Create a reusable function to do region growing given a seed pixel.
3. Counting objects in a binary image can be done using basic morphological operations. Implement the algorithm in Matlab.
   **Basic binary counting algorithm .**
   1. Find a foreground pixel in the image.
   2. Grow the whole object with a suitable structural element.
   3. Subtract the grown image from the original image.(Which will remove the selected object form the original image) and increment the count.
   4. Repeat the process until the original image is blank and return the total number of objects.

4. Apply the algorithm developed in Question 3 to the blood stain image after selecting a suitable threshold and count the number of blood cells.
5. With a slight modification to the algorithm region-growing can be applied for gray scale images.
   1. Select at least one seed pixel manually.
   2. Dilate the existing pixels and accept the ones which are within a cutoff value(say .05) of the mean value of the existing selection.(Where as typically our criteria is different for binary images)
   3. Repeat the process till the selected region stops growing.



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***Additional work.***

After identifying the objects try to save them as separate images in question 4.