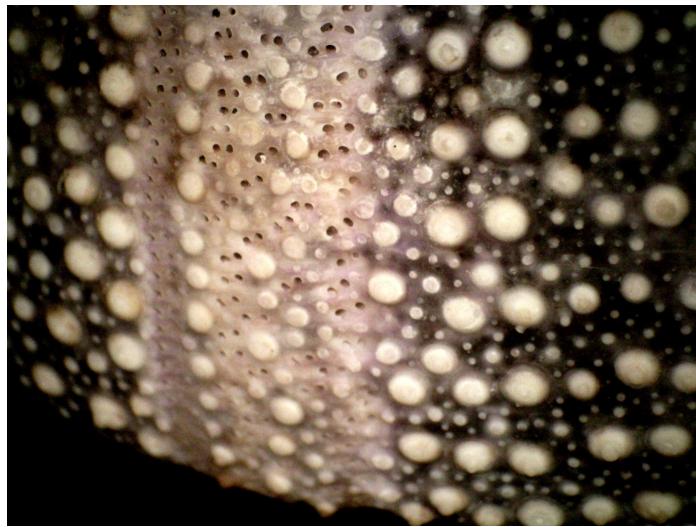


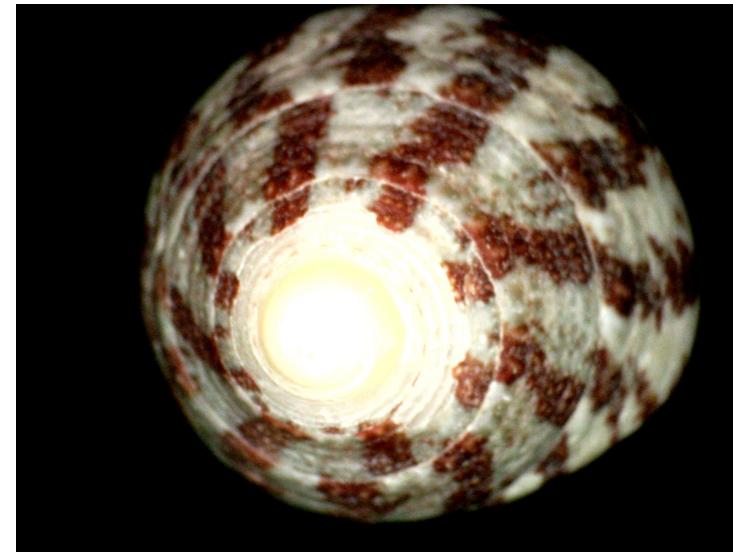
# Texture Analysis of Shell Images

by Shania Mitra (CH18B067)

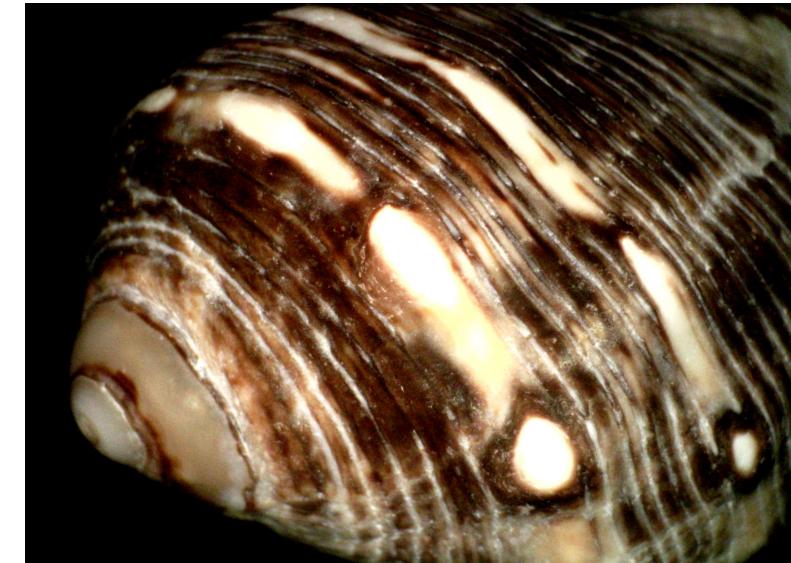
E. Shriram (CH18B107)



Template Type 1



Template Type 2



Template Type 3



Template Type 4



Template Type 5

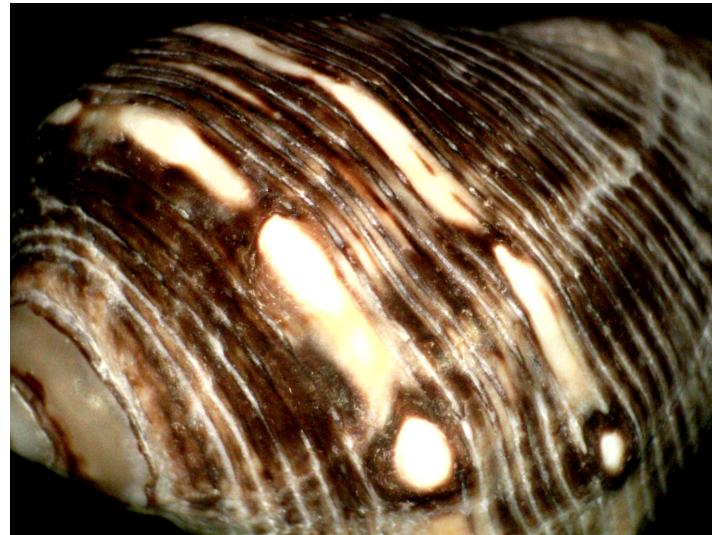
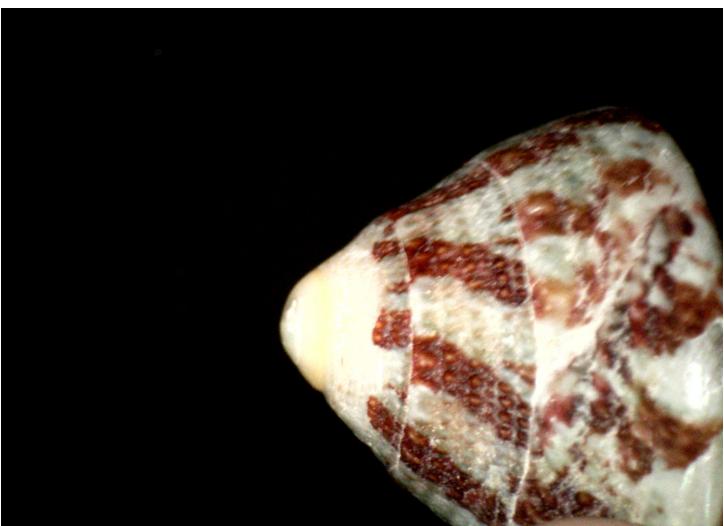
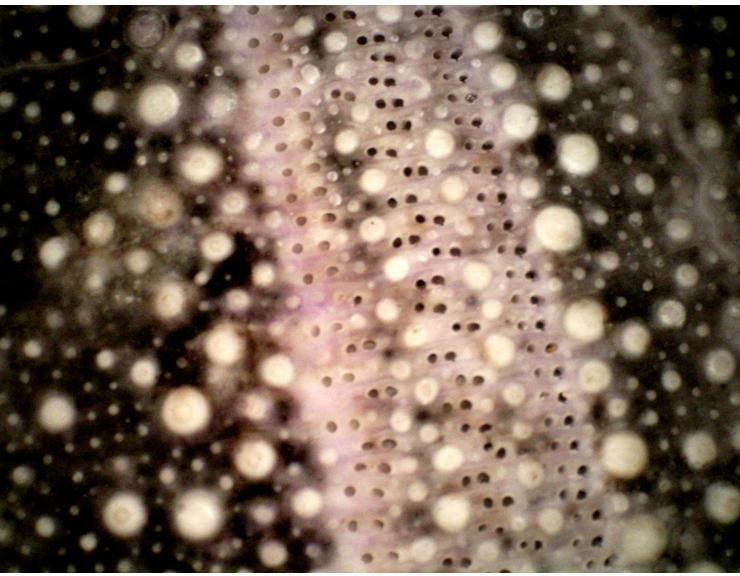
# Histogram Operations

- An image histogram plots the pixel intensity values vs. their frequency of occurrence
- The main idea behind the usage of histograms is that similar images have similar histograms
- The histograms of all the template and test colour images were plotted and distance measures were used to check the distance between them. For a given test image, its histogram was matched with those of all the template images and the one with least distance was said to be the class of the given test shell.

# Usage of GLCM

- GLCM ( Gray Level Co-occurrence Matrix ) is a statistical method of examining texture that considers the spatial relationship of pixels.
- Properties of GLCM used:
  - Contrast
  - Energy
  - Homogeneity
  - Correlation
- The following properties were computed for each of the test as well as template images and the absolute differences between the test and template images were summed. The template with the least difference was concluded to be the parent class of the given test image.

# Test Images





# Outputs of Both the Methods

SL.NO	EXPECTED OUTPUT	GLCM METHOD	HISTOGRAM METHOD
1	Type 1	Type 1	Type 1
2	Type 1	Type 1	Type 1
3	Type 2	Type 4	Type 3
4	Type 2	Type 2	Type 1
5	Type 3	Type 5	Type 3
6	Type 3	Type 3	Type 2
7	Type 4	Type 4	Type 1
8	Type 5	Type 5	Type 5
9	Type 5	Type 5	Type 5

Thank You