The Complexity of a Shape

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The seminar included information about different kinds of shapes in depth, describing the variance in their structure. The seminar started off by showing the transition from a polygon to a human face. The following slides consisted of three different kinds of shapes, where one seemed to have simple structure but the most complex colour combination while one had simple colour combination but the most complex structure.

There are many different types of complexities such as Algebraic, Topological. Morphological, Combinatorial and Representational complexity. One of the complexities included the concept of curvature, in which we were shown how it is used to create different kinds of shapes such as osculating circles. It consisted of the creation of a shape between three circles which was similar to a triangle.

It talked about 3D shapes and how they differ from a 2D image: in a 2 dimensional image, we only see a part of the object which is the one visible to the device capturing the image while a 3 dimensional image is captured from different angles, making a overall image in which we can see the image from different angles by moving the image by actions such as rotating, swiping and many others, depending on the device on which we are viewing the image.

There are different ways to measure complexity such as Simple Measures, Curvature Variation, Mutual Information, View Similarity, Convexities/Concavity, which involve many mathematical operations such as polynomials, discrete mathematics and calculus. The seminar showed the link between many things we have studied and their application in the field of Computer Science.

References

None