

The Complexity of the Photo Mosaic in Floating Tile Art: 'Gator in the Bay'

What is a photo mosaic?

In the field of photographic imaging, a photo mosaic is usually a photograph that has been divided into rectangular sections, usually of equal size, and each section is replaced with another photograph that matches the primary image. When viewed from a distance, the individual small images appear as pixels that create a single primary image. When viewed up close, the primary image reveals that it is made up of many thousands of smaller images.

The two kinds of photo mosaic techniques depend on how the artist applies the matching of color. The simplest photo mosaic process averages down each section of the primary image to a single color. The colors of each of the smaller replacement images are also averaged down to a single color. Each part of the primary image is then replaced with an image from the replacement images that matches color as similar as possible. Basically each part of the target image is reduced by down sampling and then replaced with a small image whose average color matches that section acting like a pixel.

In the more advanced kind of photo mosaic, the target image is not down sampled. The matching of color is done by comparing each pixel in the rectangle to the corresponding pixel from each replacement image. The rectangular sections that create the primary image are replaced with an image that minimizes the total difference in color. This advanced technique requires much more computation than the 'simple' process. However, when replaced with these smaller images, the result is a more accurate representation of the primary image.

In Floating Tile Art: 'Gator in the Bay', the alligator head is a sculpture and the body is a photo mosaic with the primary image being an alligator body. In order to create an accurate representation of the alligator body, the advanced technique is applied so that the result is a high resolution photo mosaic.

To assemble a photo mosaic is complicated if the artist is trying to recreate an accurate representation of the primary image. The primary image must be high-resolution with accurate detail so that every color is matched as close as possible. Using thousands of high-resolution images requires massive computation; this is what limits the size and quality of the result of the final mosaic.

Photo mosaics are generally created as a single primary image that is square or rectangular. 'Gator in the Bay' is a photo mosaic that has a complicated shape that is not square. The alligator body is assembled with 102 rectangles that are 4 feet by 8 feet. The shape of the body is almost the size of a football field. The size causes the image files to become very large and difficult to manipulate. To create a photo mosaic of this size requires the primary image to be cut into 102 equal pieces in which each piece becomes a sub-primary image. Each of these sub-sections then become a primary image and a sub-photo mosaic section that, when assembled together, become the main primary image that is an alligator body.