PolyGARI

Similar Project

- GARI: Genetic Algorithm for Reproducing Images
- By Ahmed Gad
- Works by setting and mutating pixels (very slow)

Results: GARI

Original

1 Millionth Generation

PolyGARI

- Similar in concept, with a slightly different goal
- Works by overlaying many polygons on top of each other to recreate the input image
- Mutation is done by adjusting the color and positions of polygons

Customizable Constants

- Number of points per polygon
- Number of polygons
- Number of generations

Non-Standard Libraries

Cairo: For drawing vector graphics

X11: for displaying output

Fitness

Calculated by absolute difference between the original image and the test image

```
difference += ABS(test_a - goal_a);
difference += ABS(test_r - goal_r);
difference += ABS(test_g - goal_g);
difference += ABS(test_b - goal_b);
```

Results: Mona Lisa

Original

1 Millionth Generation

Guess the character

100,000 Generations

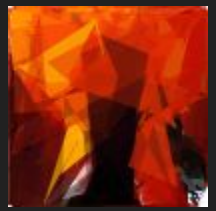
Original: Sonic

Guess the character

100,000 Generations

Original: Mario

Guess the character



100,000 Generations

Original: Duke Nukem

This one did not work too well

Another Attempt

Original

100,000 Generation

Note: Fitness was 98%

Conclusion

High Contrast Images Work Best

Future

- Make fitness function for code readability
- Dump fitness data for processing
- Graph fitness data
- Support command line args for ease of testing
- The program is slow, explore optimizing for speed
- Compare against Particle Swarm Optimization

Repository

https://github.com/DenverEllis/GARI