Artificial Intelligence Lab

Department of Computer Science, Applied Artificial Intelligence Group

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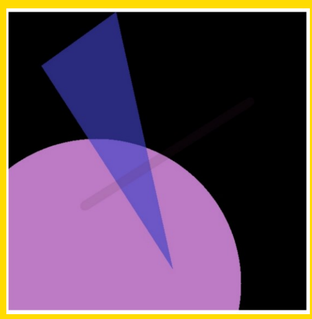
Evolved Art with Transparent, Overlapping, and Geometric Shapes

Motivation

- Evolutionary art and creativity – generate art through artificial evolution and indirect genotype-to-phenotype mappings
- Approximate images with transparent and overlapping polygons, circles, lines
- Produce visually appealing results and novel artistic styles

Methods

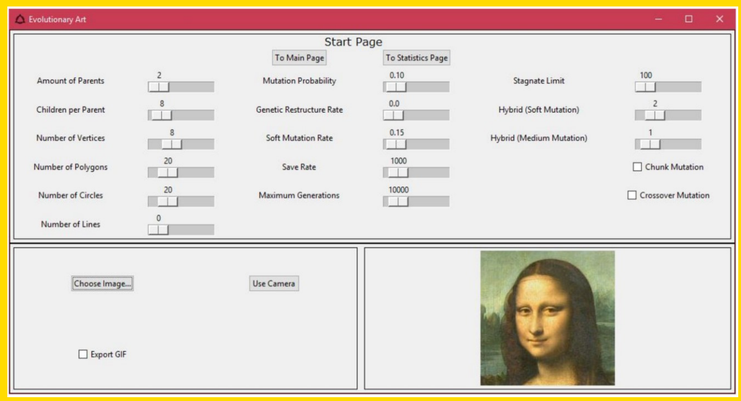
Type	Width x Height	Colour	Alpha	Coordinates	Vertices/ Radius/ Thickness
Polygon	200 x 200	(65, 6, 197)	0.64	[[22, 36], [110, 172], [72, 0]]	3
Circle	200 x 200	(243, 159, 253)	0.77	(59, 182)	97
Line	200 x 200	(35, 89, 71)	0.12	(51, 130), (162, 60)	6



Fitness function:
- Sum of pixel by pixel difference on 3 RGB channels

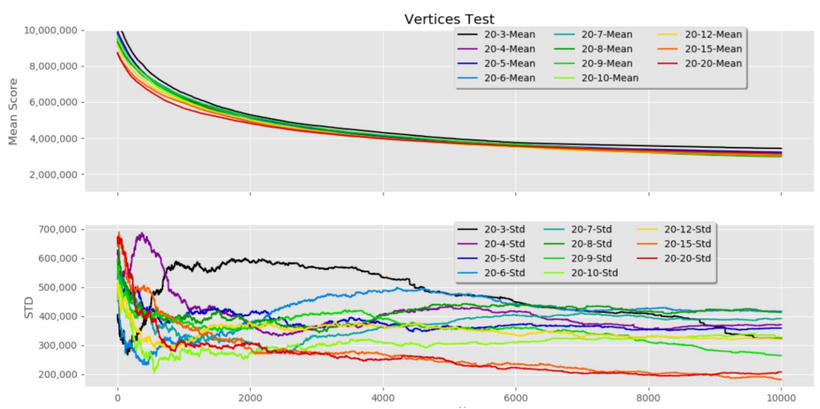
Mutation operator:
- Soft
- Medium
- Hybrid

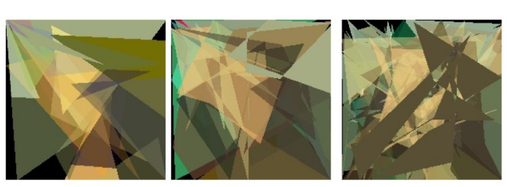
Rendering:
- Black canvas
- Print each gene one by one
- OpenCV
- RGB channels
- Each gene represents one shape



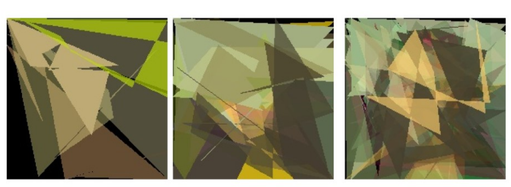
Code: https://github.com/joacber/Evolved-art-with-transparent-overlapping-and-geometric-shapes

Results



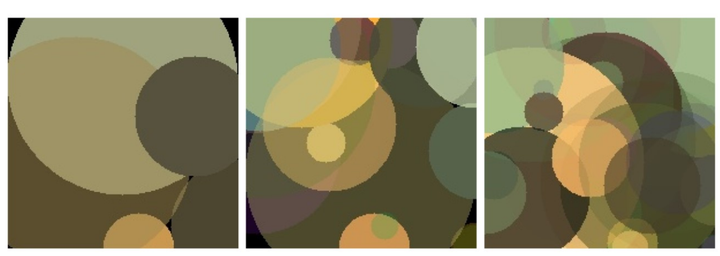


Samples from the vertices tests (10,000 generations), with 3, 8, and 20 vertices.

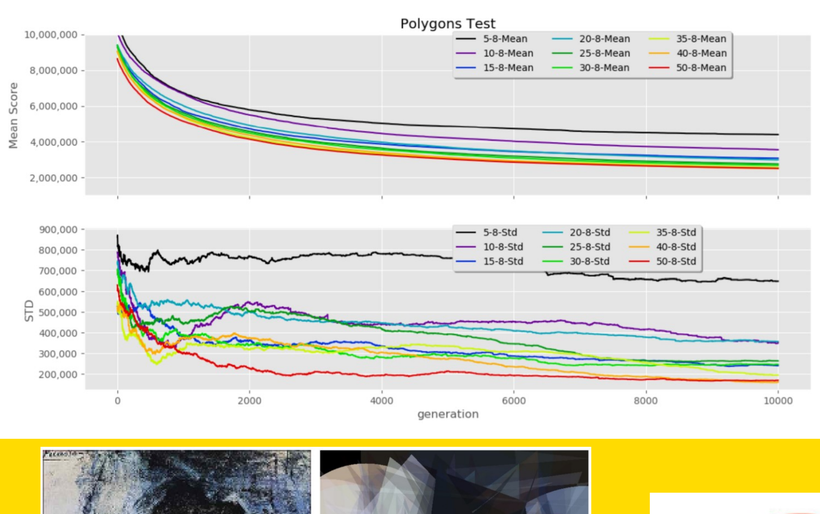


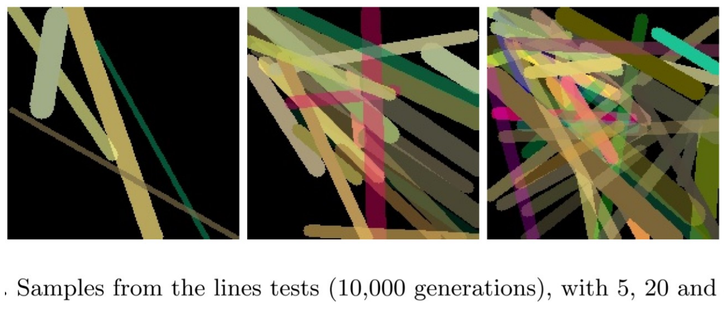
Samples from polygon tests (10,000 generations), with 5, 25, and 50 polygons.

Fig. 12. Samples from the gene combination tests (10,000 generations) with [10 Circles 10 Poly], [5 Circles 15 Polygons], [5 Circles 5 Polygons 10 Lines]



Samples from the circles tests (10,000 generations), with 5, 20, and 40 circles.





. Samples from the lines tests (10,000 generations), with 5, 20 and 40 lines

Images

Fig. 13. Blue Nude by Pablo Picasso

Fig. 14. Google Chrome logo

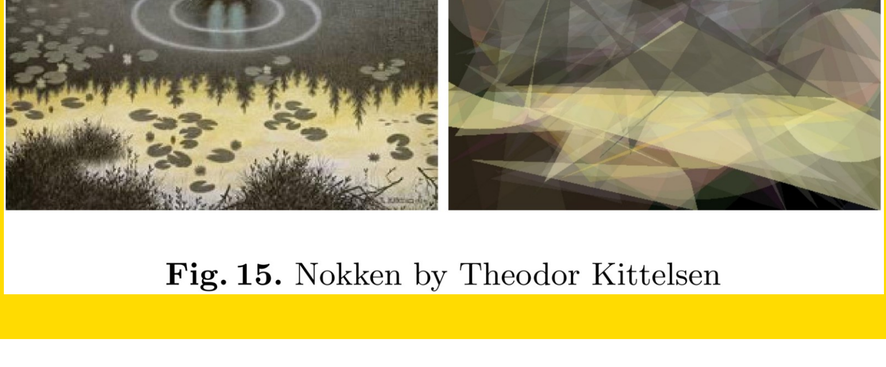


Fig. 15. Nokken by Theodor Kittelsen