

SURVIVAL OF THE PRETTIEST

Alexandra Zaragoza

CSCI 460 – Spring
2026



- 1.DESCRPTION AND
REQUIREMENTS
- 2.DEMONSTRATION
3. PROCESS AND SOLUTION
- 4.LEARNING AND
DEVELOPMENT

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1.DESCRPTION AND
REQUIREMENTS

2.DEMONSTRATION

3. PROCESS AND SOLUTION

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DESCRIPTION AND REQUIREMENTS

- Project Description:

- Develop an application that builds an image from a collection of overlapping polygons of various sizes, colors, and transparencies that resembles an original image

- Requirements:

- Use a **genetic algorithm** to find the best arrangement of **polygons**
- Develop an **interface** to interact with the algorithm, allowing for modification of **parameters and operators**
- **Display** 'good' fit genomes with **statistics**

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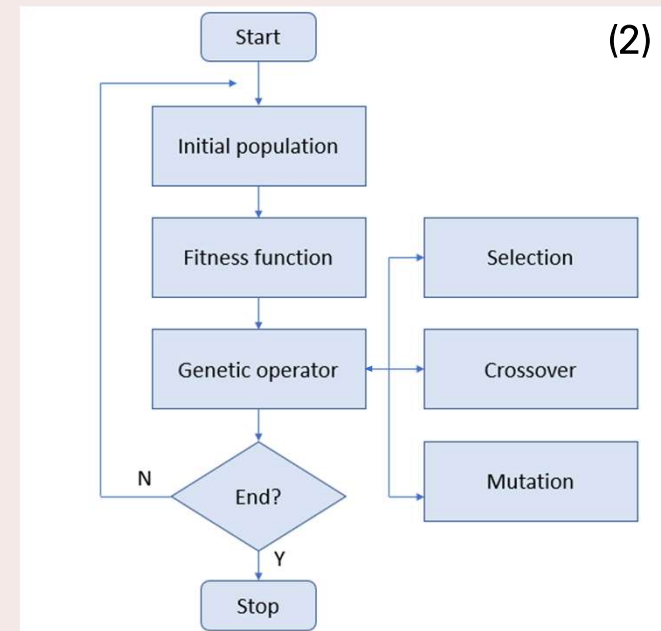
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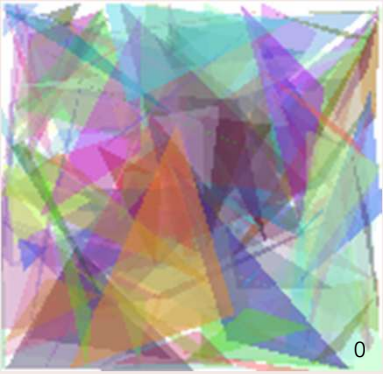
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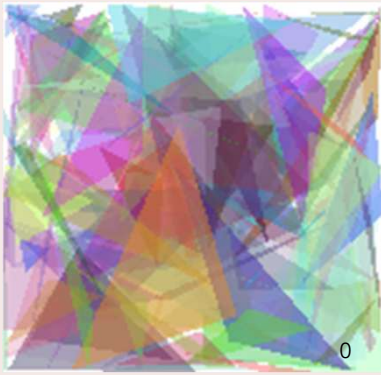
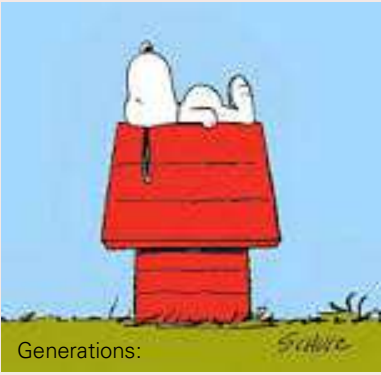
PROCESS

- Genetic Algorithm, [a] machine learning method that is used to find [an] optimal solution...based on the theory of natural selection by Charles Darwin (1).
- Individuals, the genomes of the population
- Fitness Score, how good an Individual is
- Selection, selecting the best Individuals
- Mutation, altering an Individual's 'genes'
- Crossover, merging two Individuals' 'genes'



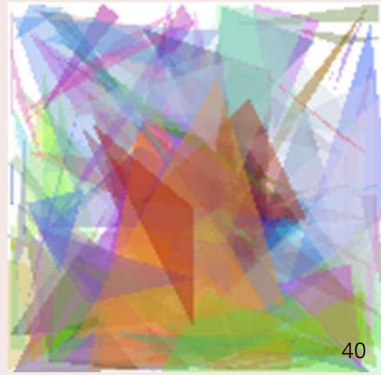
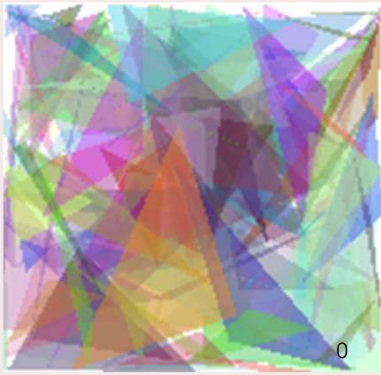


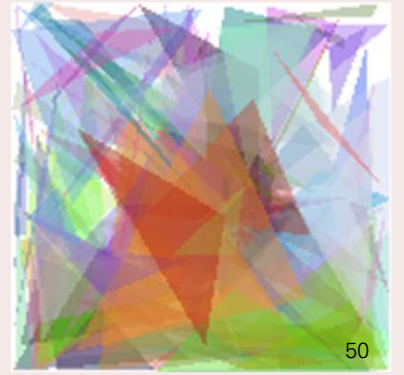
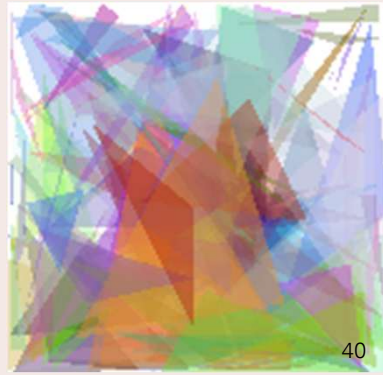
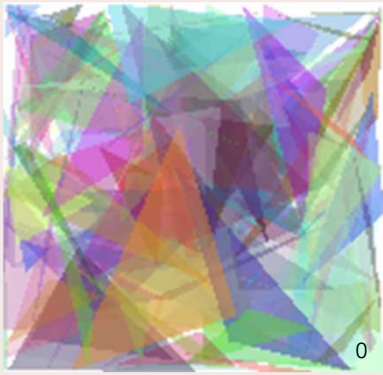


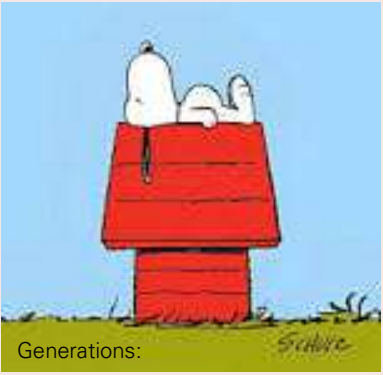




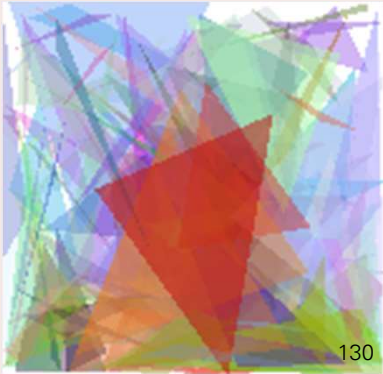
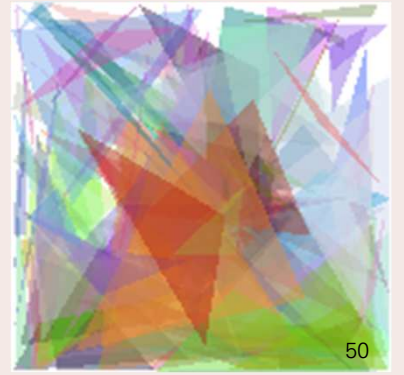
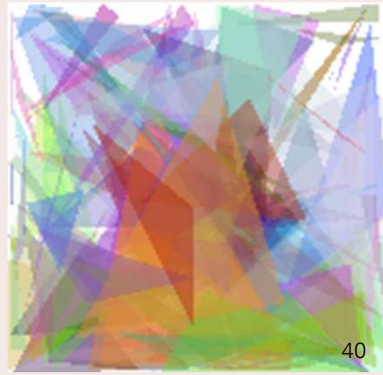
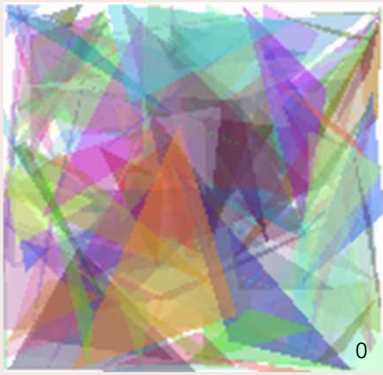
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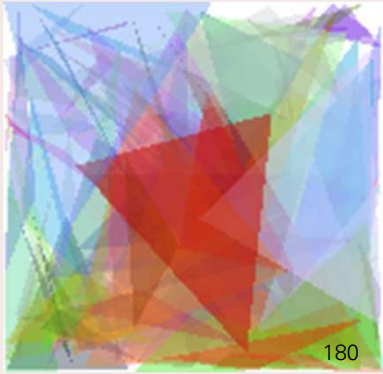
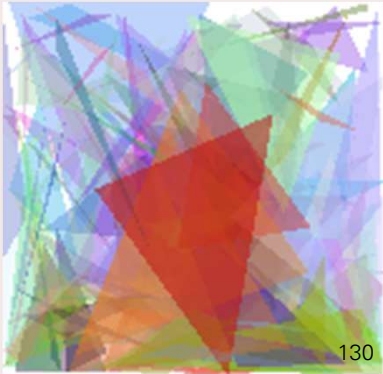
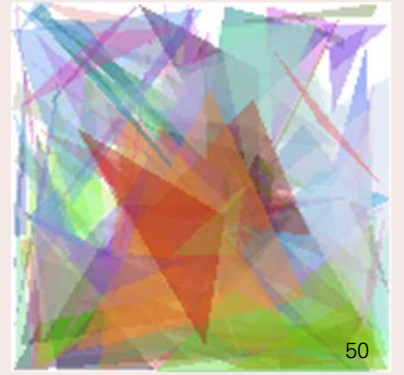
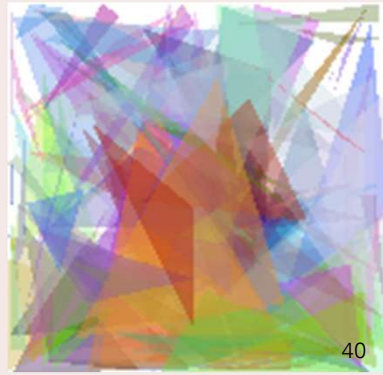
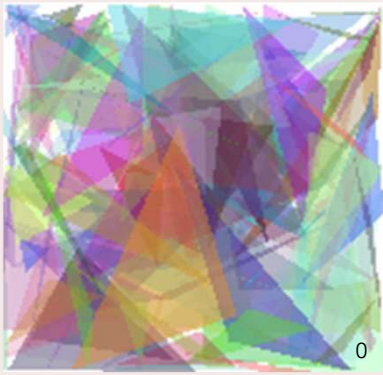
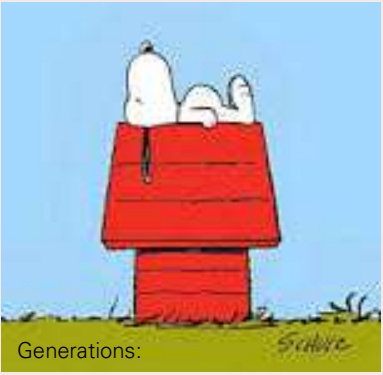


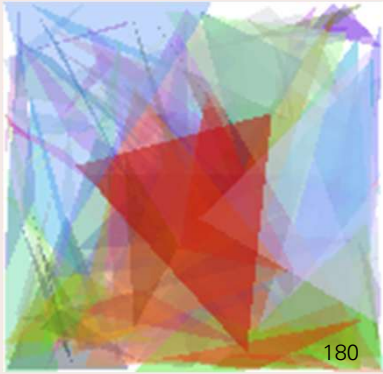
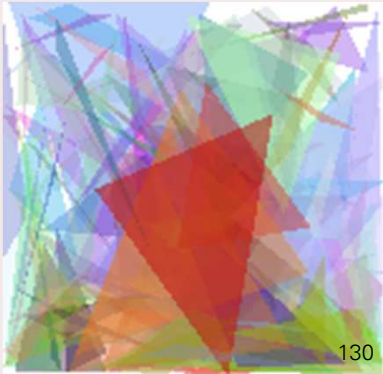
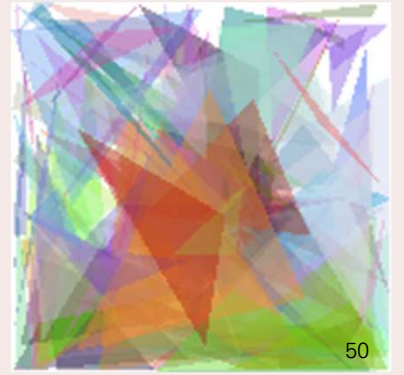
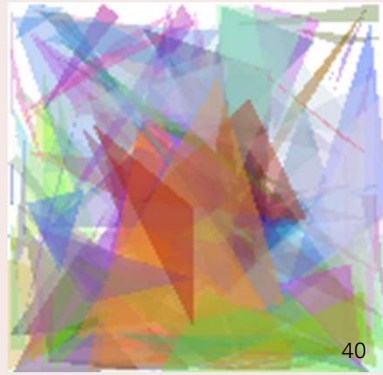
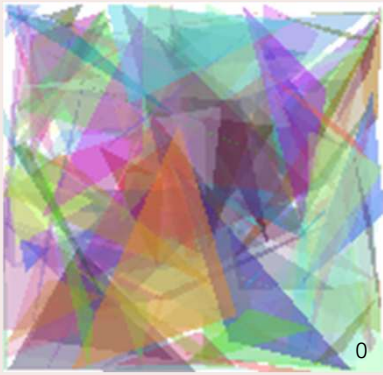


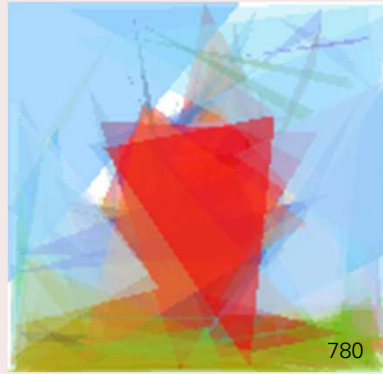
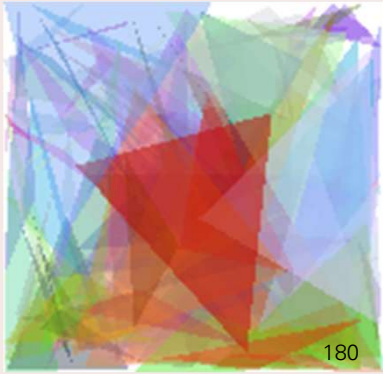
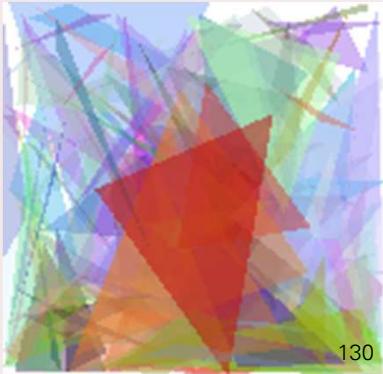
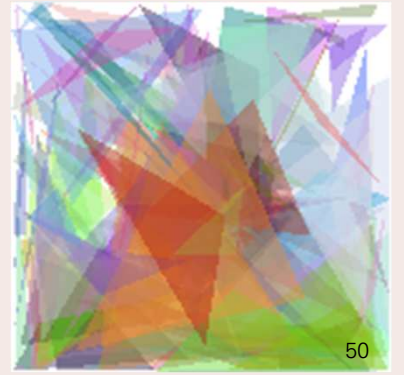
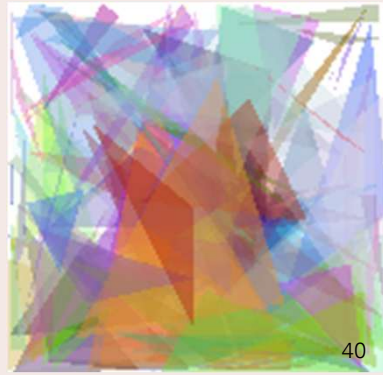
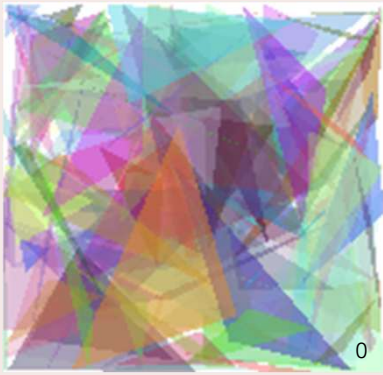
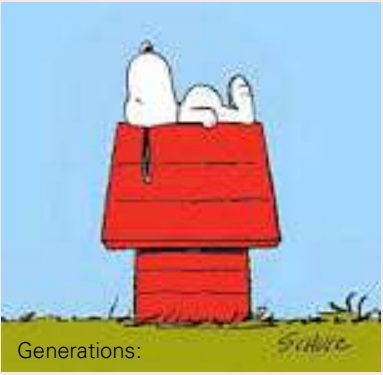


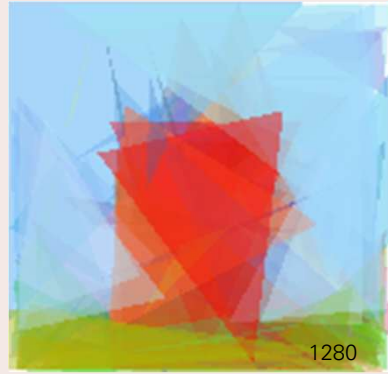
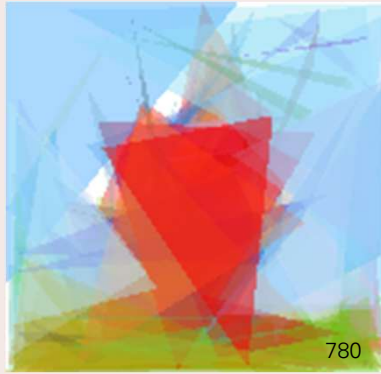
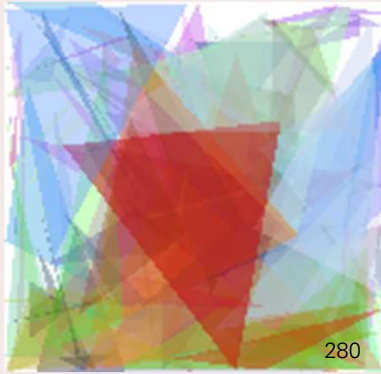
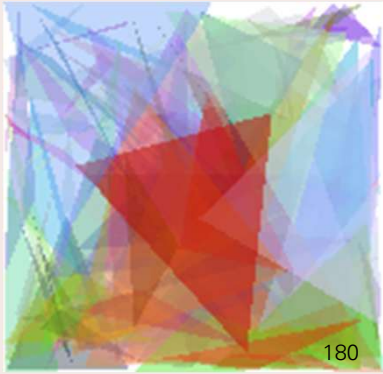
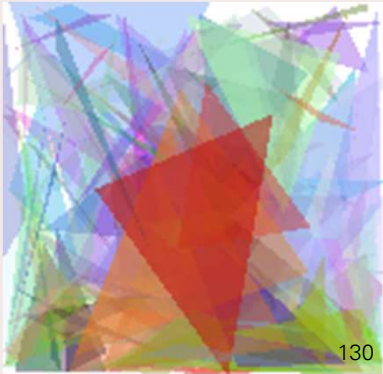
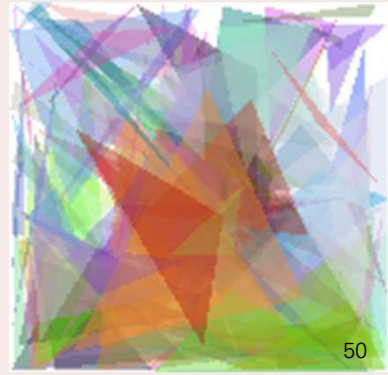
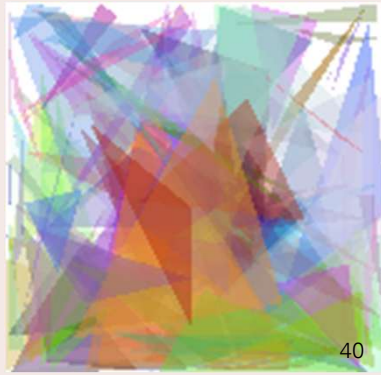
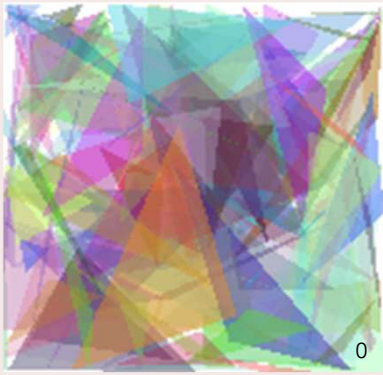
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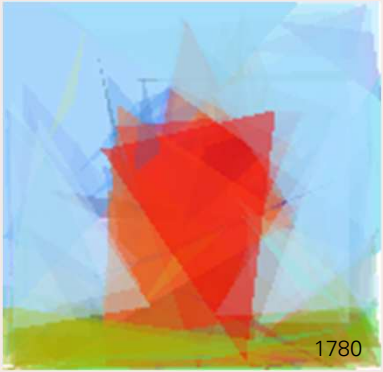
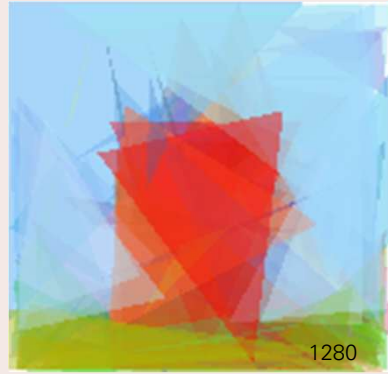
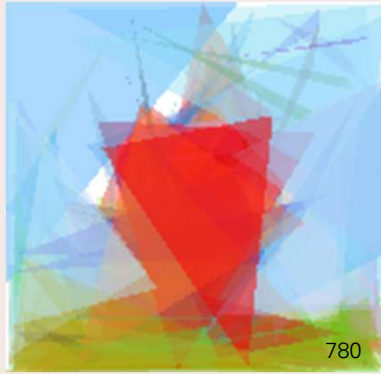
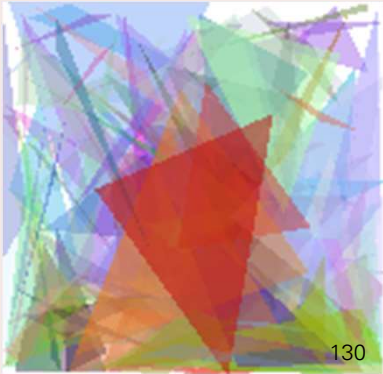
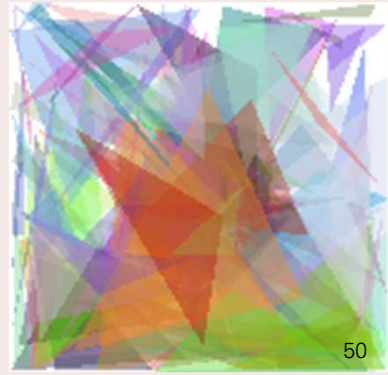
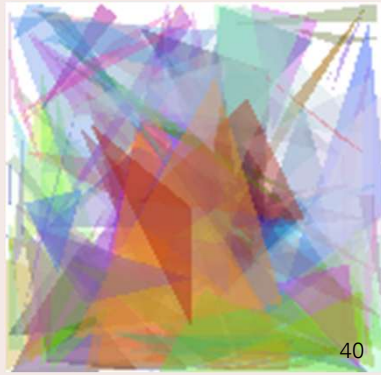
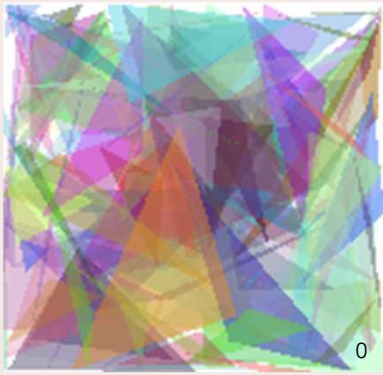
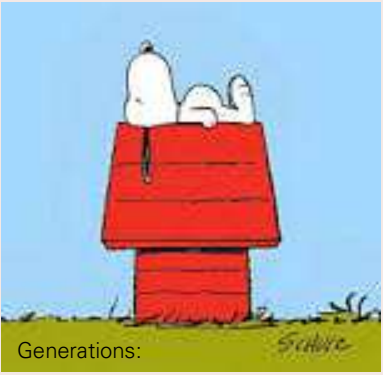


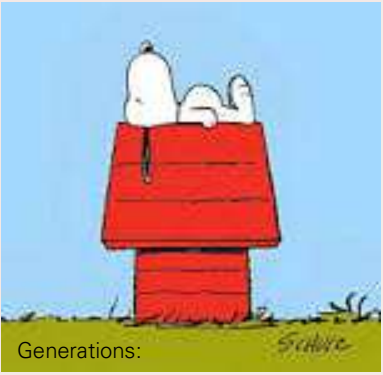




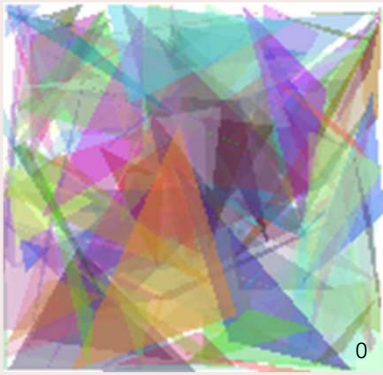








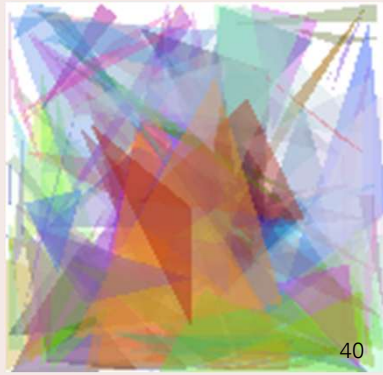
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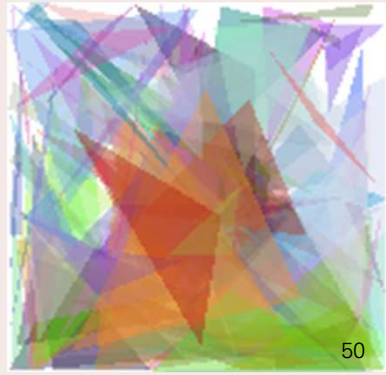
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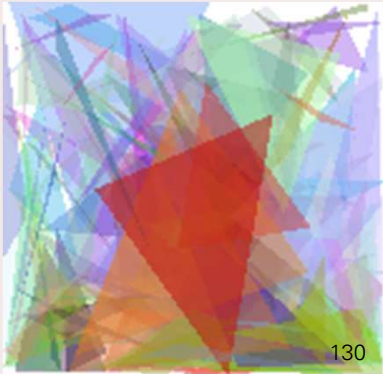
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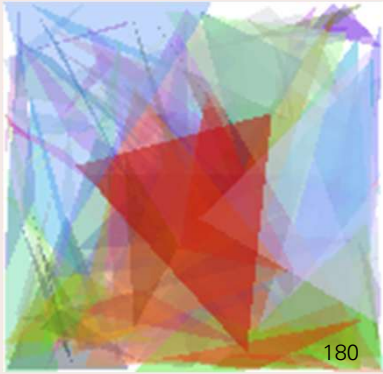
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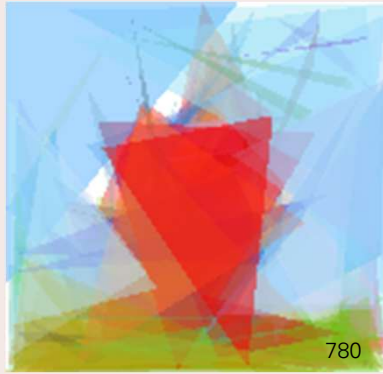
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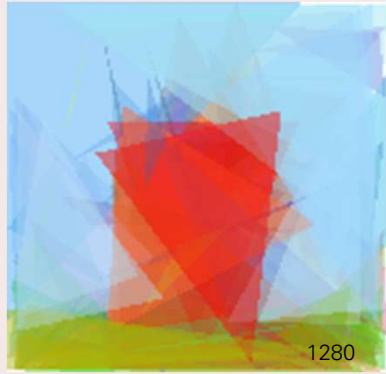
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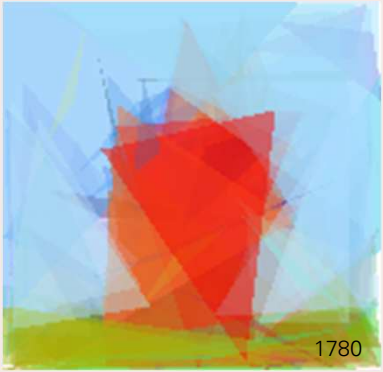
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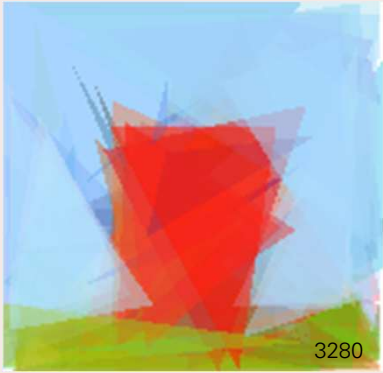
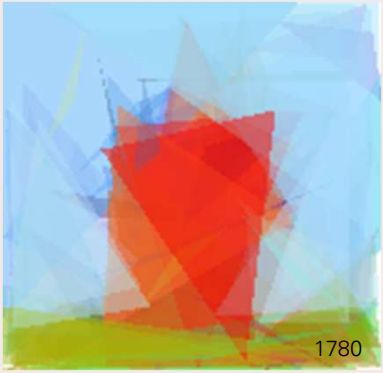
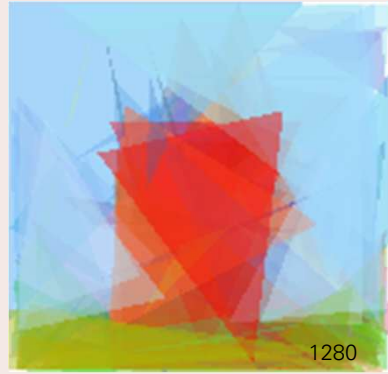
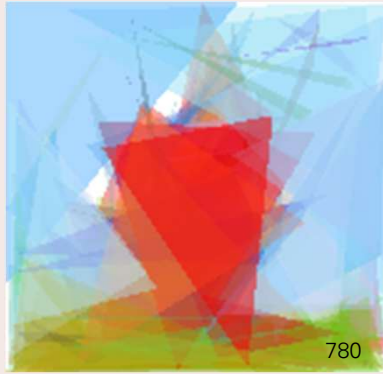
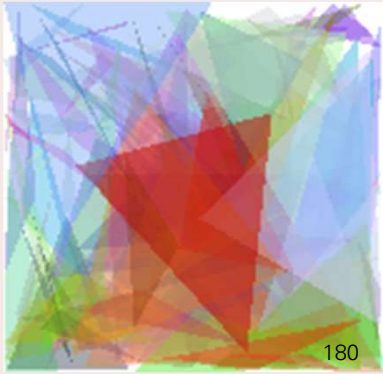
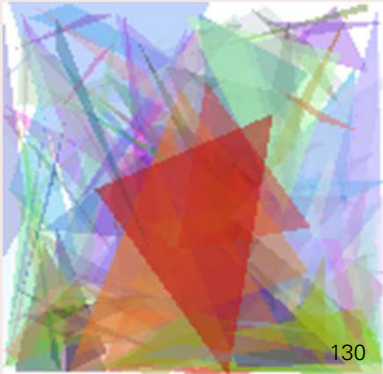
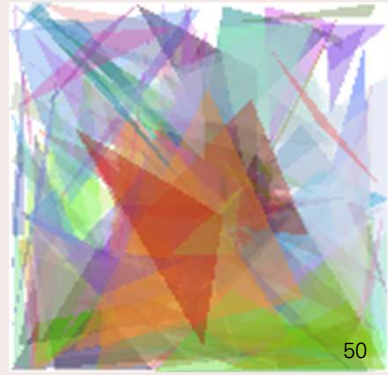
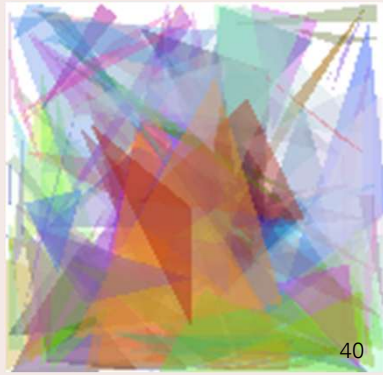
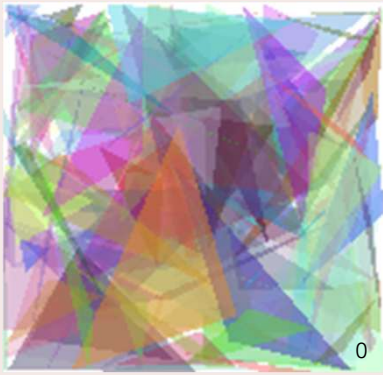
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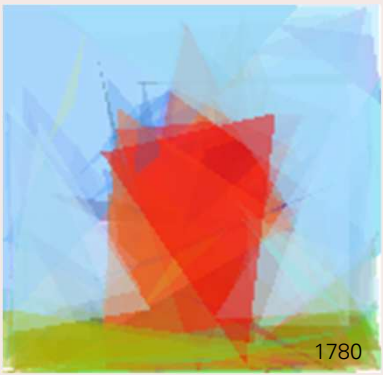
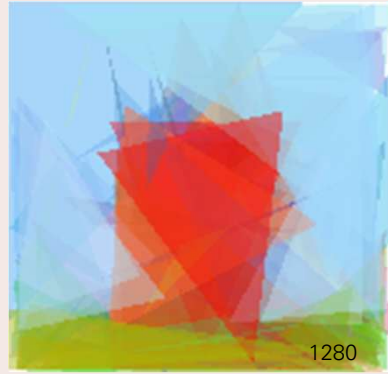
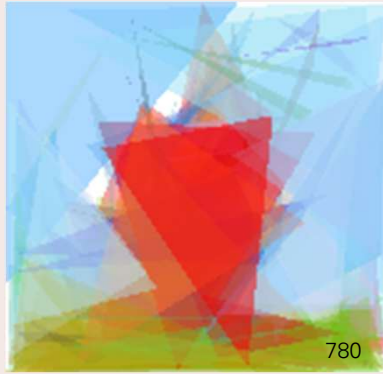
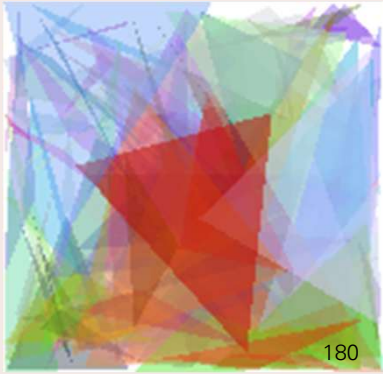
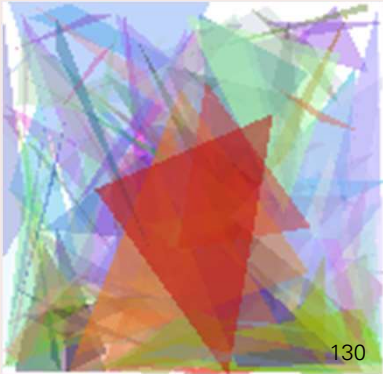
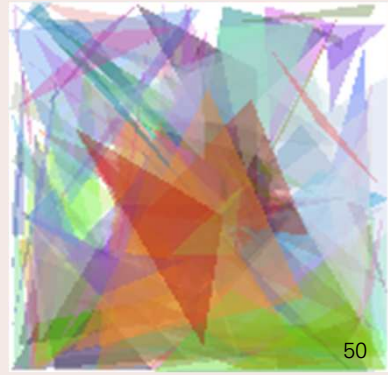
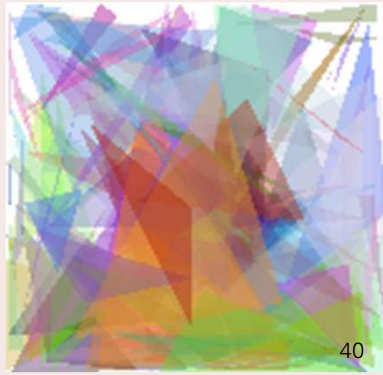
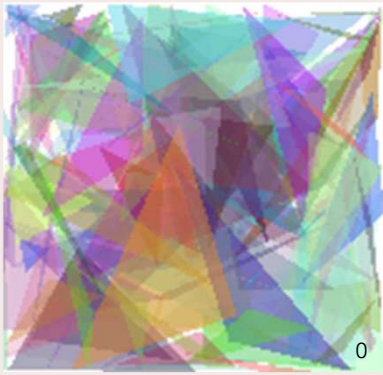
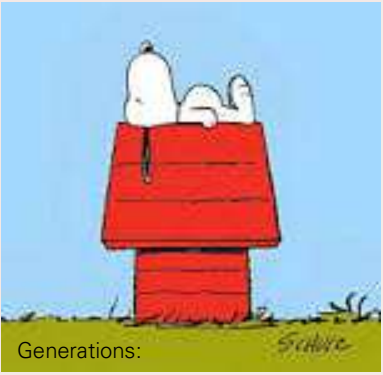


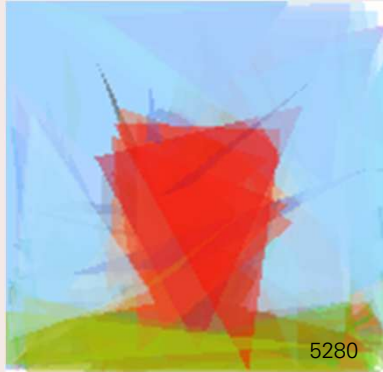
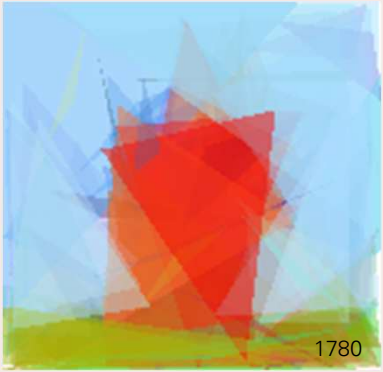
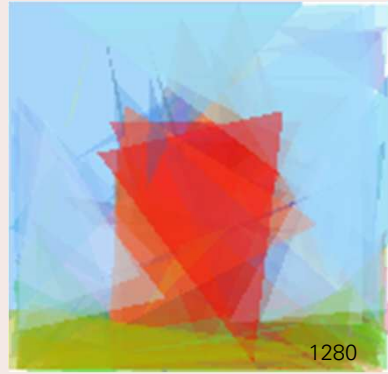
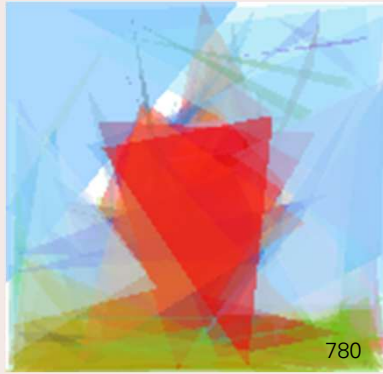
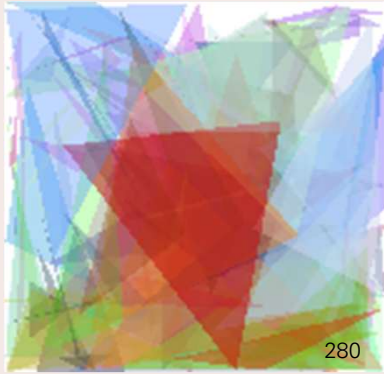
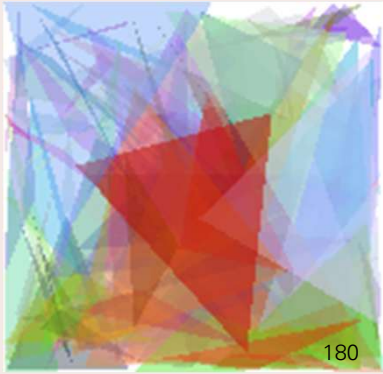
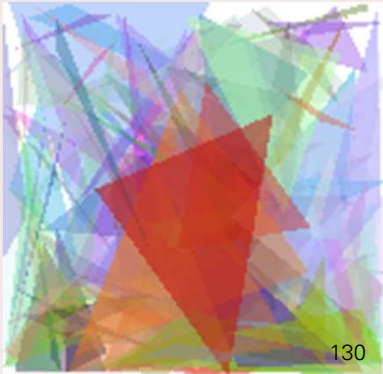
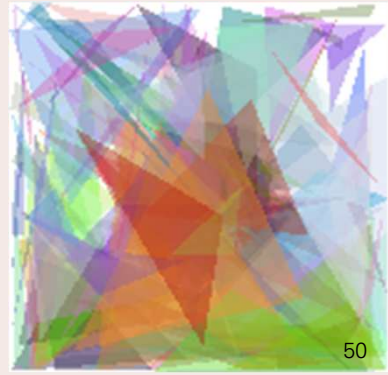
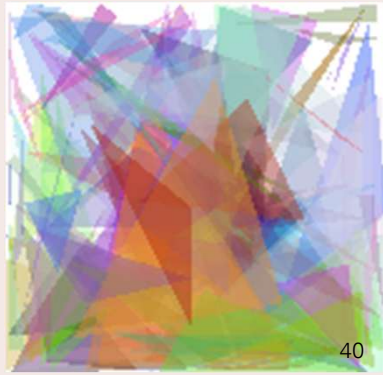
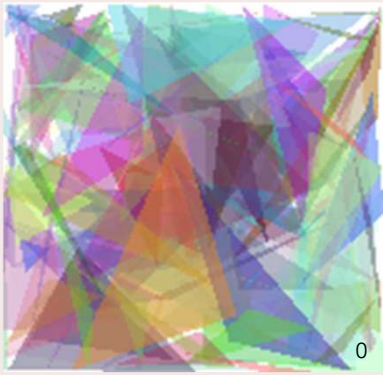
1780



3280







SOLUTION

- Design
 - Code:
 - Separate projects: From drawing polygons to testing the algorithm
 - A background task
 - Application:
 - Windows Form application (C#)
 - Ease of use
 - Project goal

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LEARNING AND DEVELOPMENT

- My best learning techniques
 - Dr. McVey-Pankratz
 - Genetic algorithm: parameters, operators; Coding: user interface (C#); Design: user interface
 - Dr. Meyer
 - Genetic algorithm: parameters, operators; Design: user interface
 - Microsoft Learn C# Guide **(3)**
 - C# programming language guide and documentation

QUESTIONS?

Thank you for
attending!

- A very special thank you to...
- Dr. McVey-Pankratz
- Dr. Meyer
- Dr. Pankratz
- Dr. Hagedorn

Works Cited

1. GENETIC ALGORITHM-DEFINITION, [ACM DIGITAL LIBRARY](#)
2. GENETIC ALGORITHM-FLOW CHART, [ACM DIGITAL LIBRARY](#)
3. MICROSOFT LEARN C# GUIDE, [C# LANGUAGE DOCUMENTATION](#)