

# SURVIVAL OF THE PRETTIEST

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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  
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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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2.DEMONSTRATION

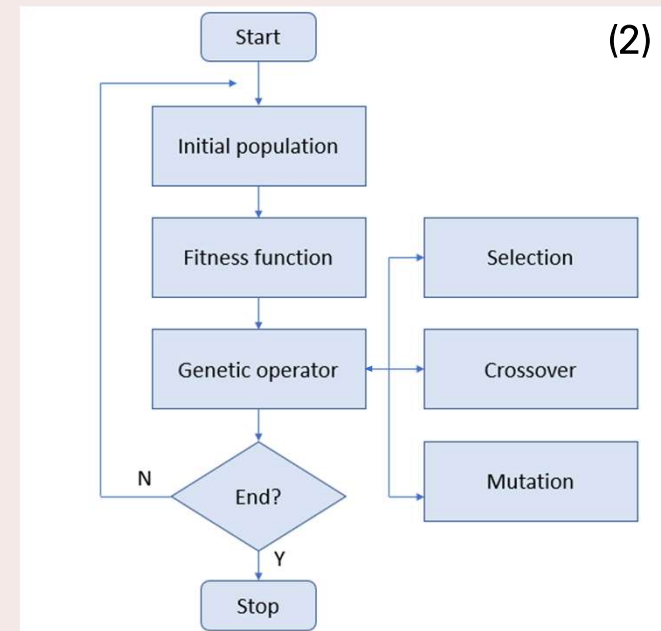
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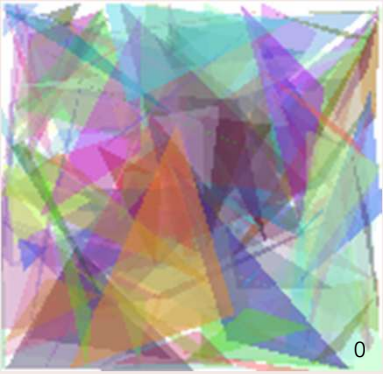
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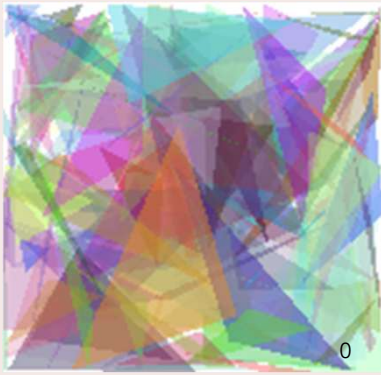
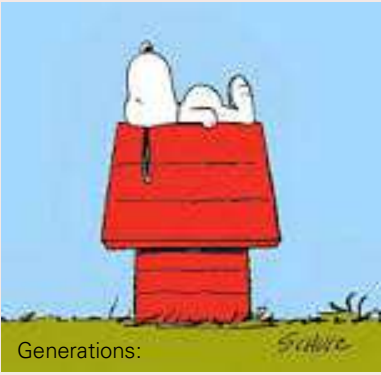
# PROCESS

- 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'



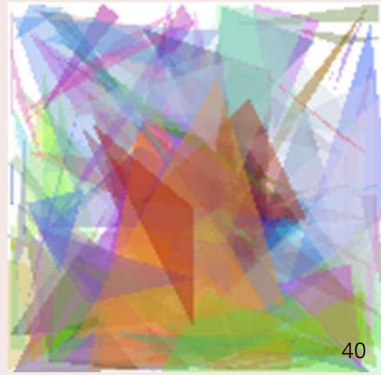
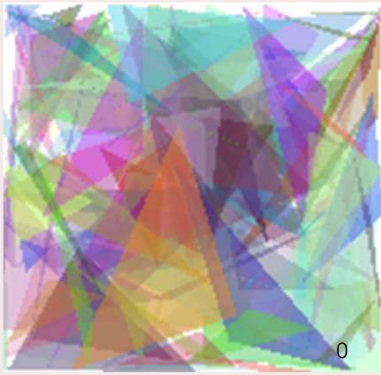


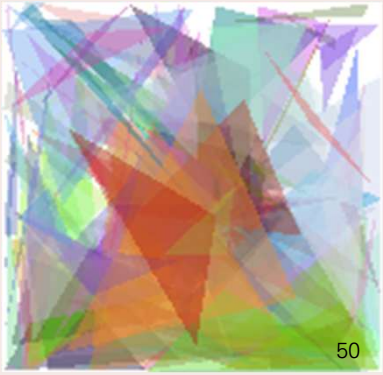
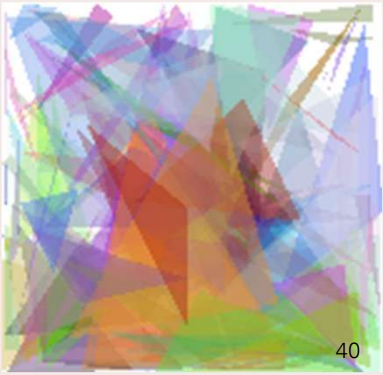
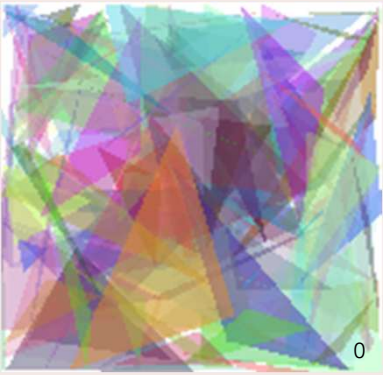


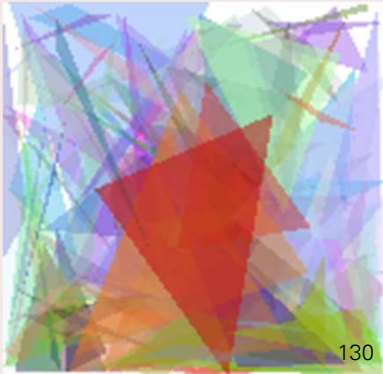
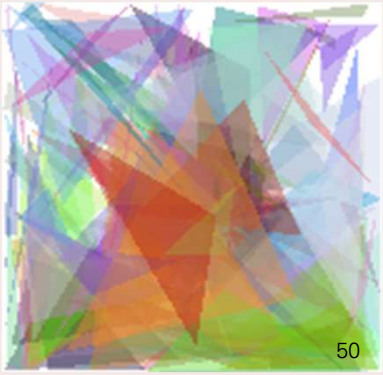
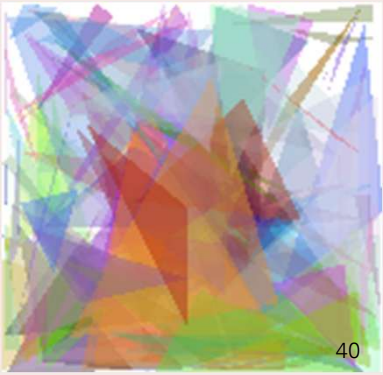
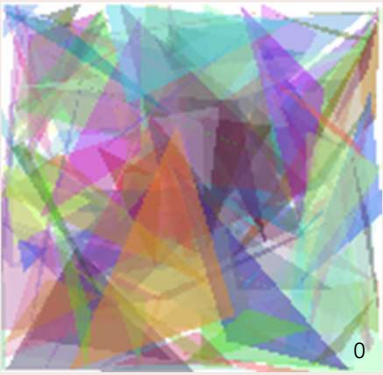
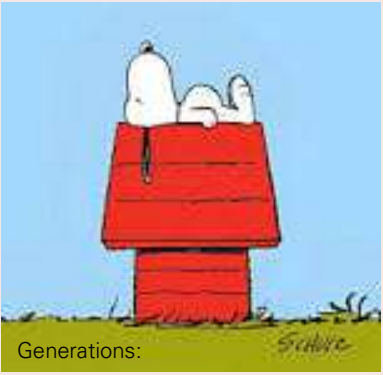


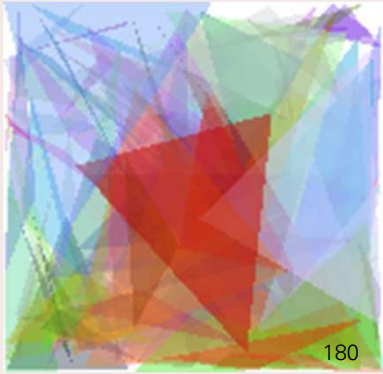
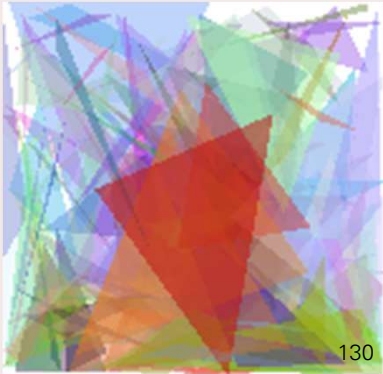
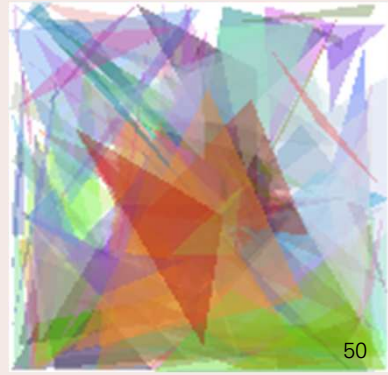
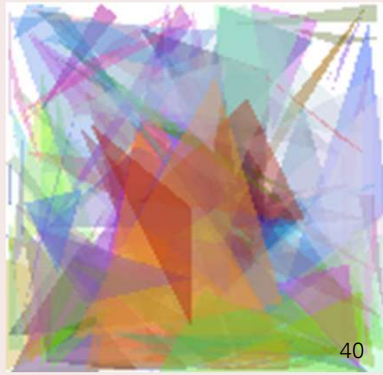
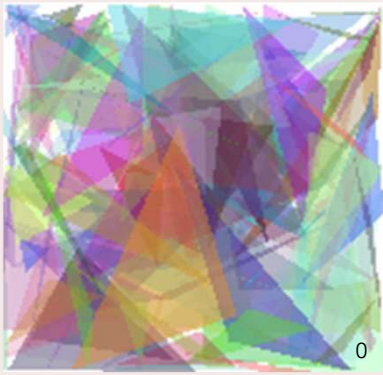
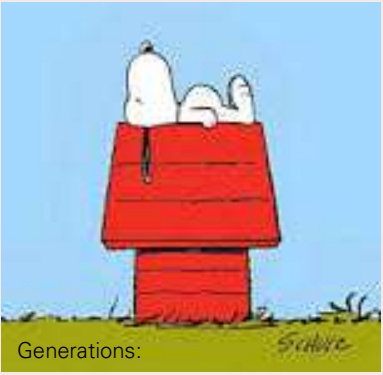


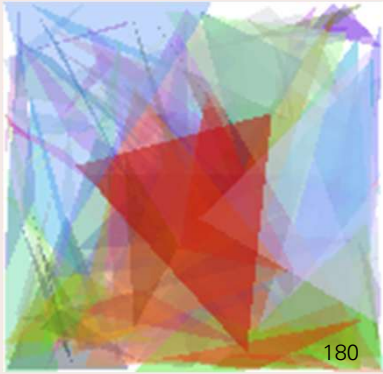
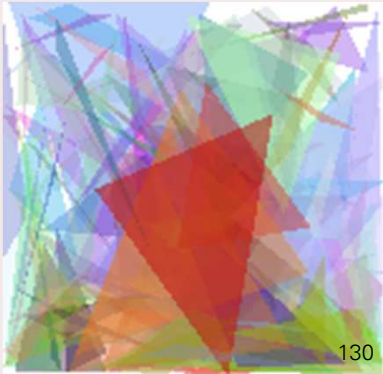
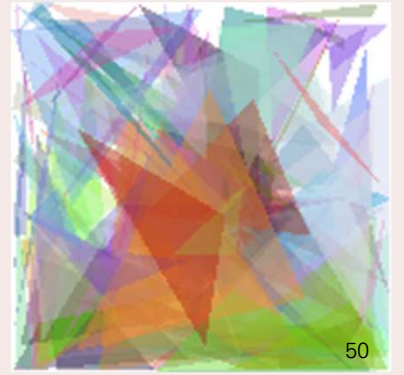
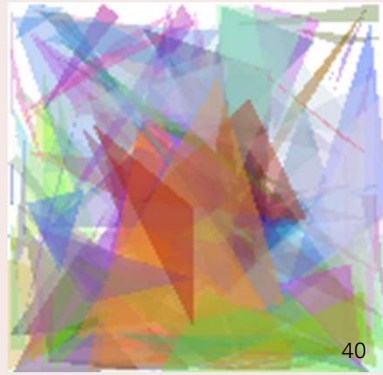
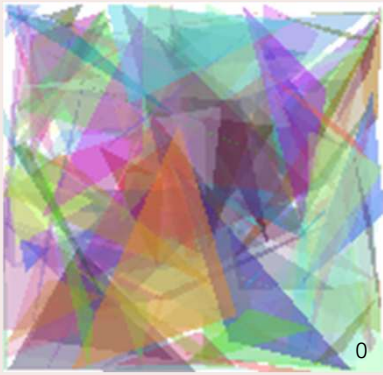
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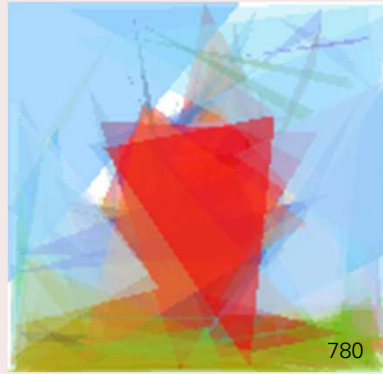
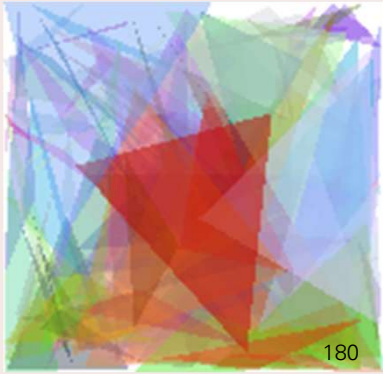
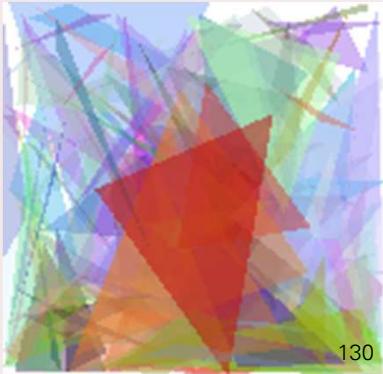
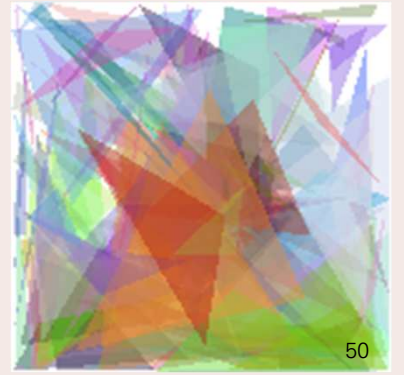
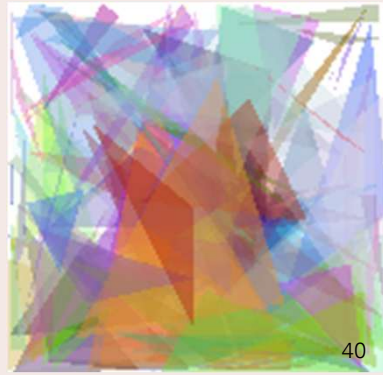
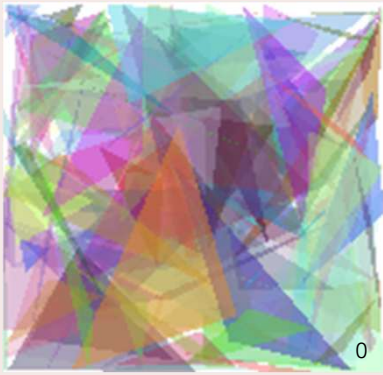
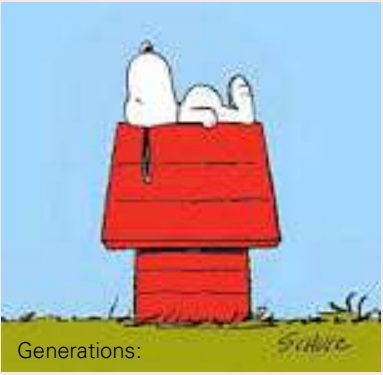


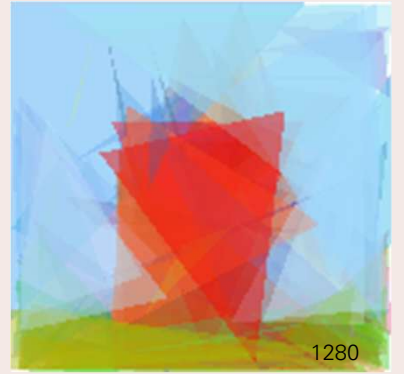
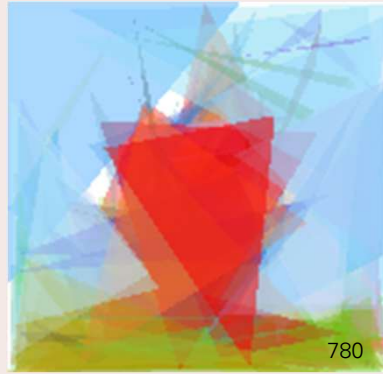
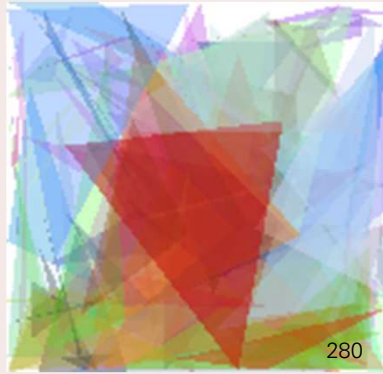
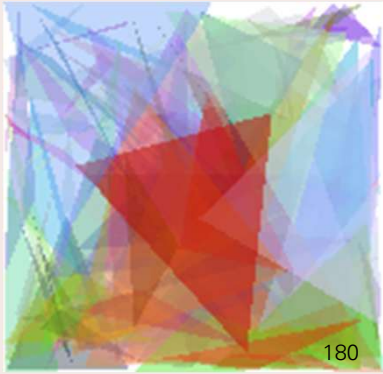
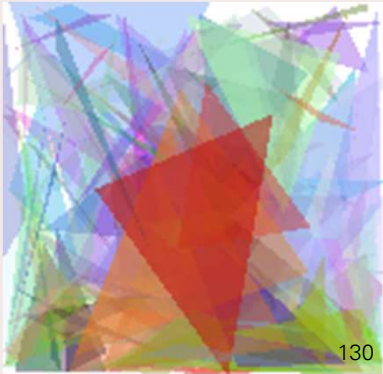
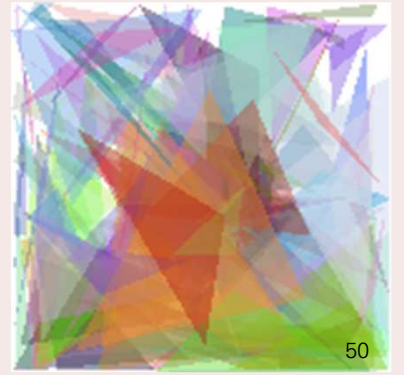
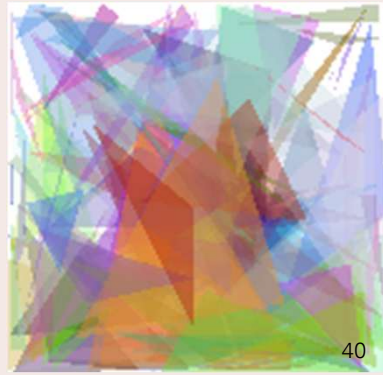
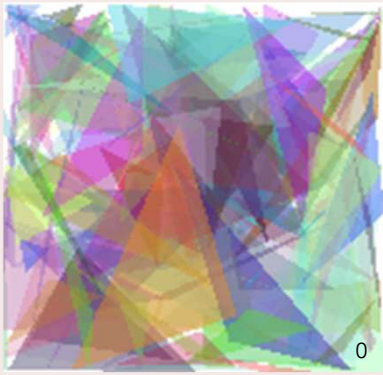


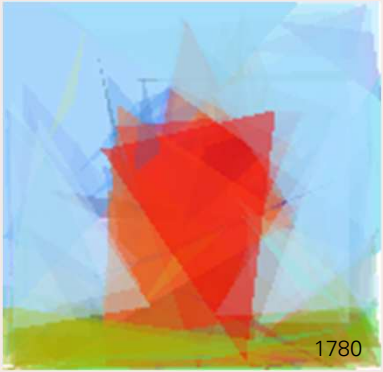
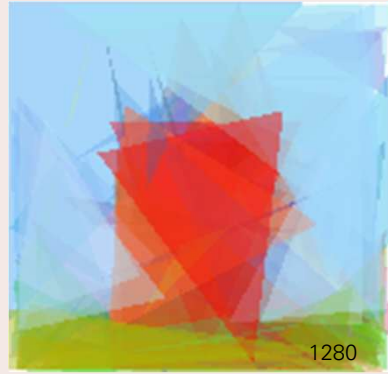
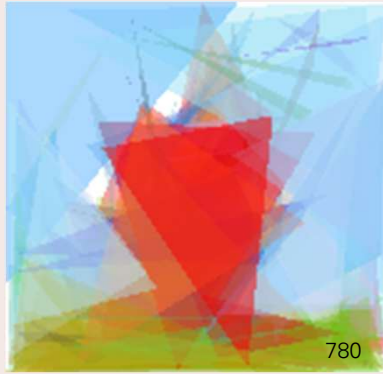
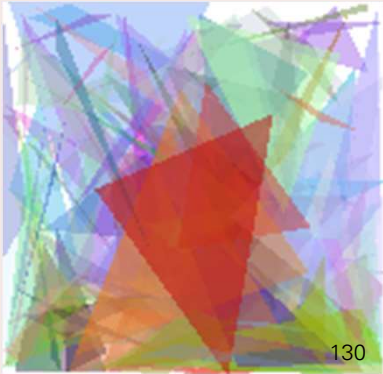
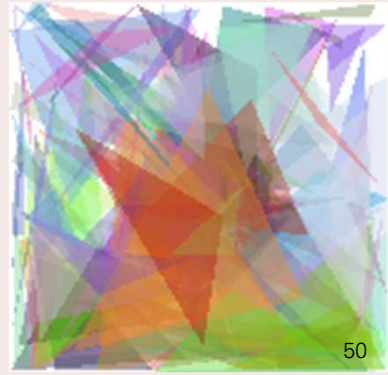
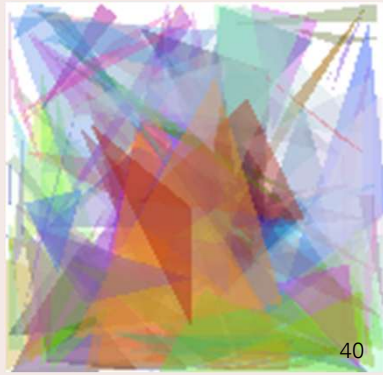
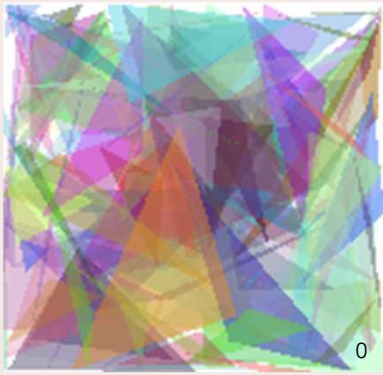
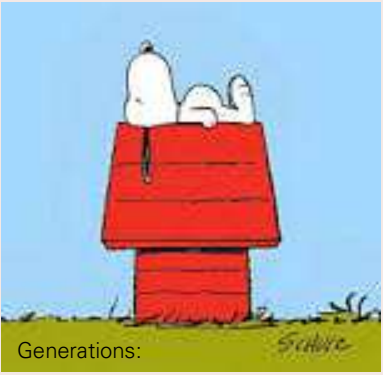


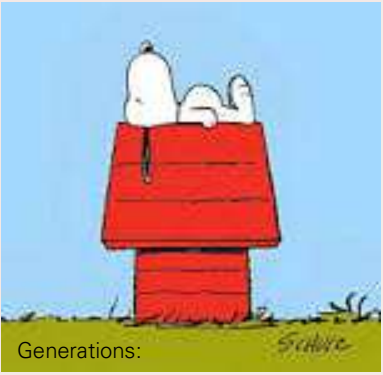




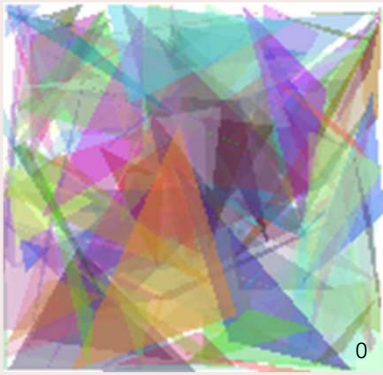








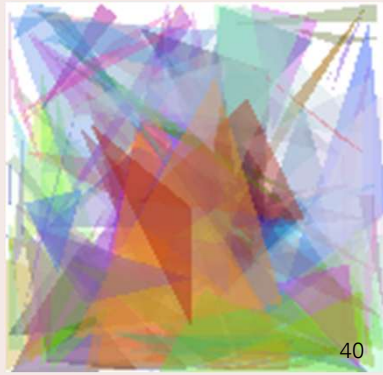
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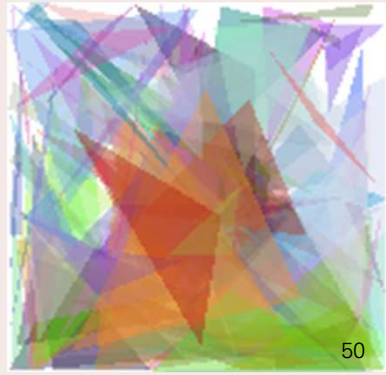
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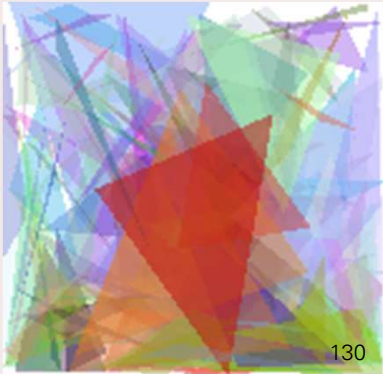
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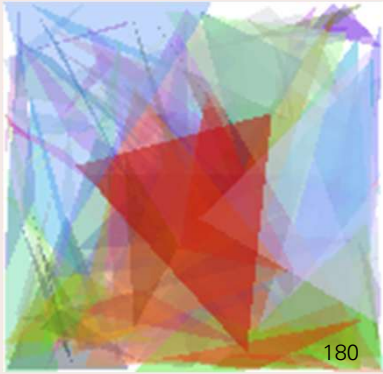
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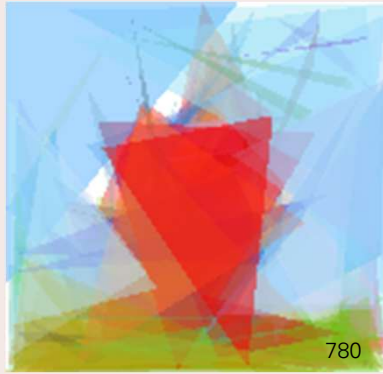
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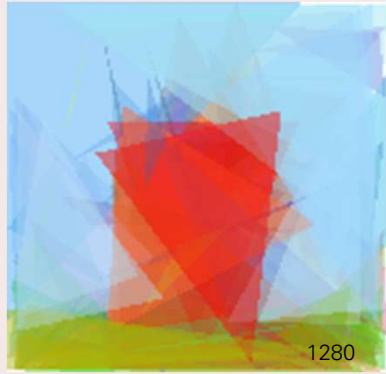
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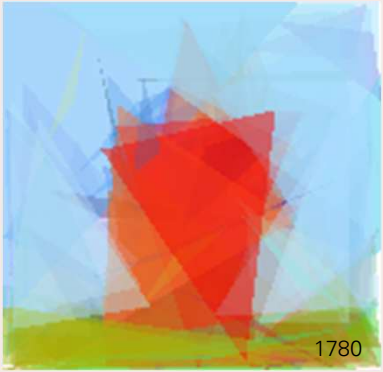
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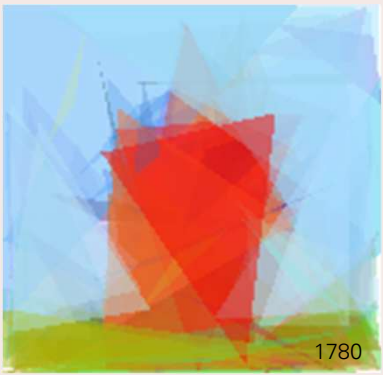
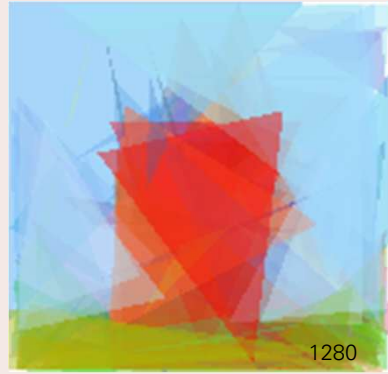
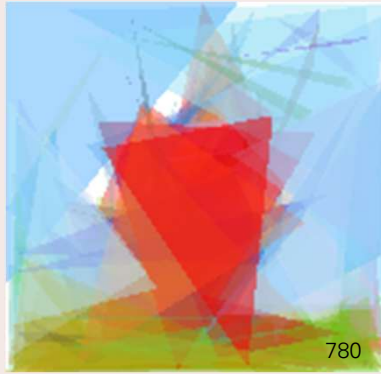
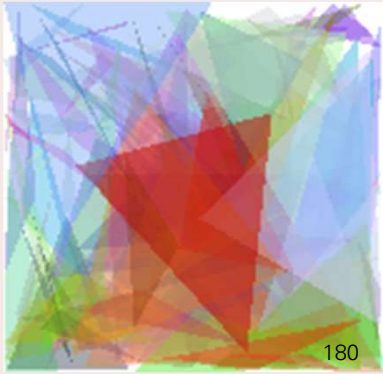
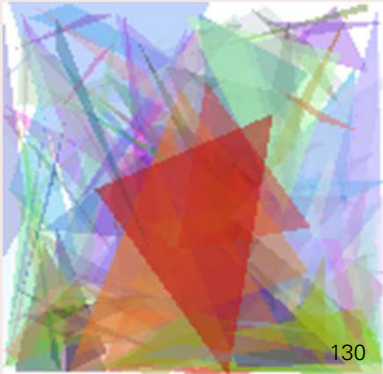
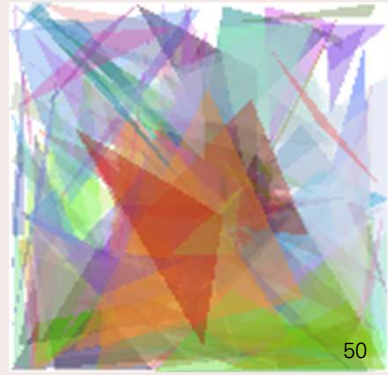
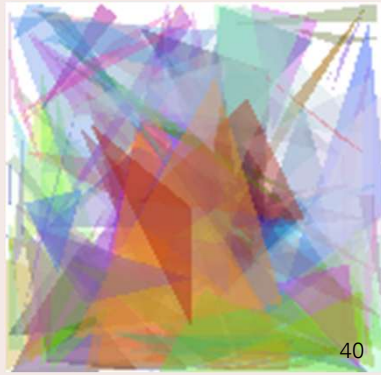
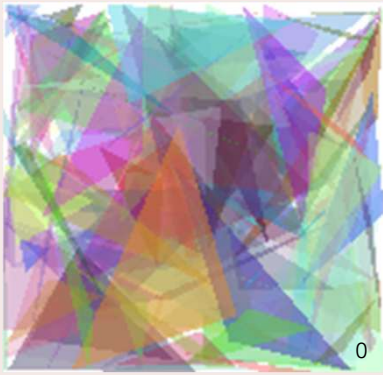
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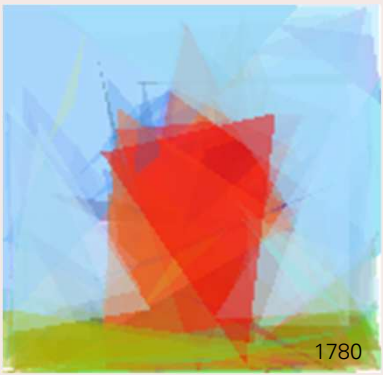
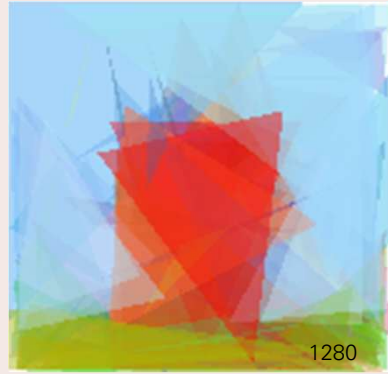
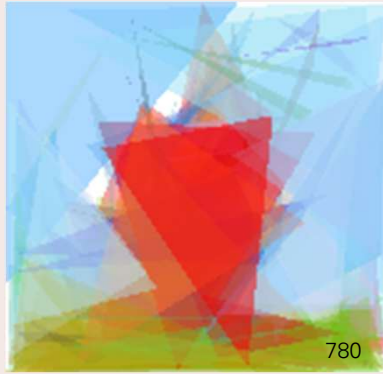
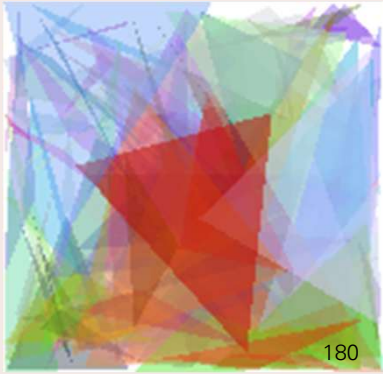
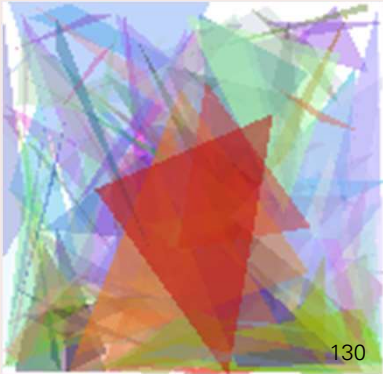
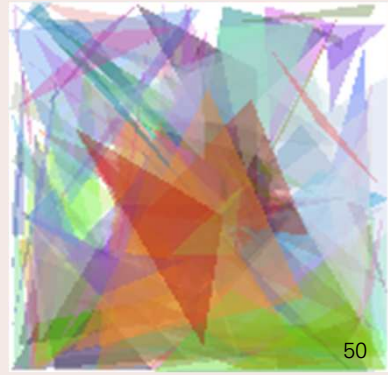
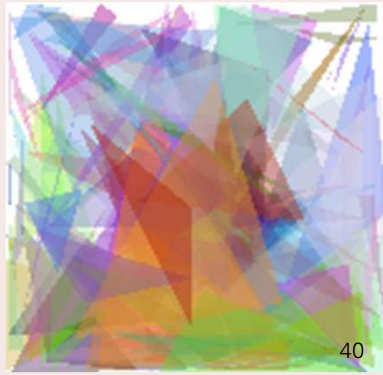
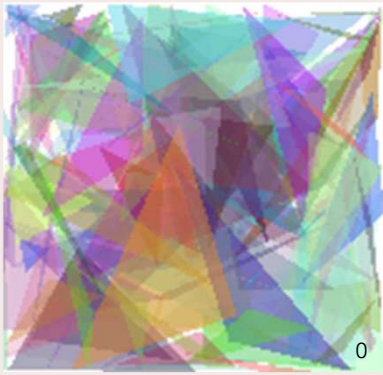
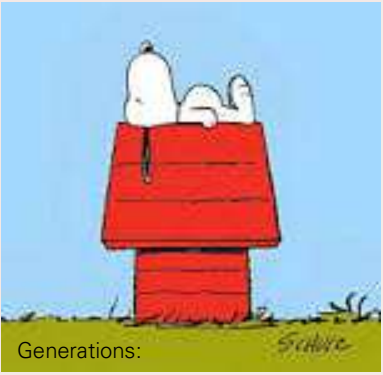


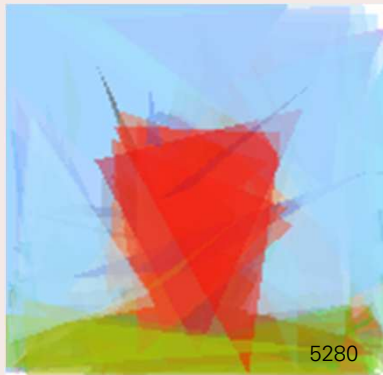
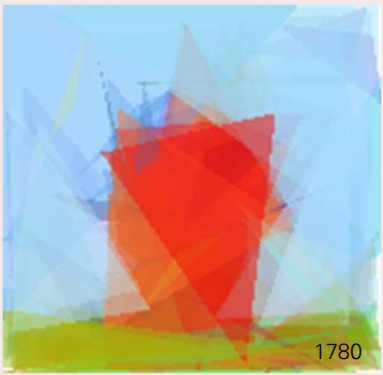
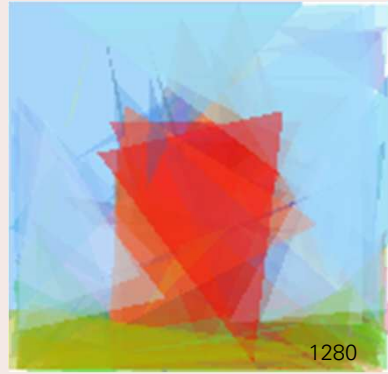
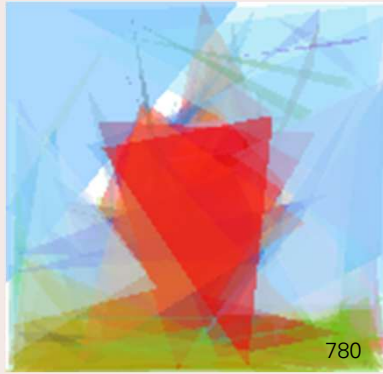
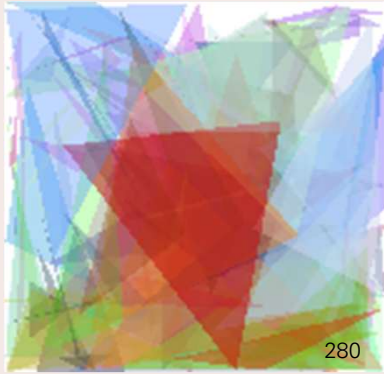
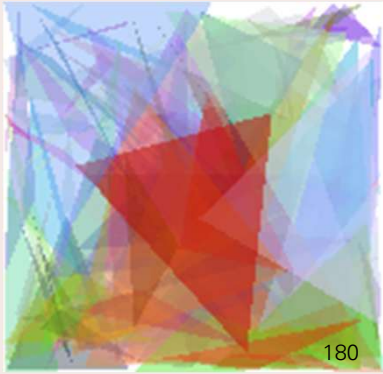
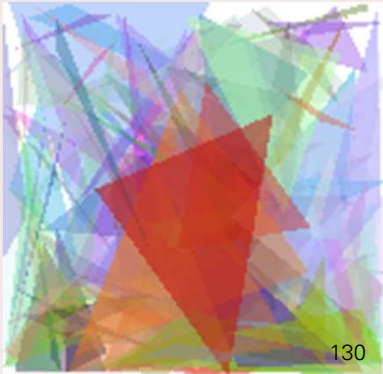
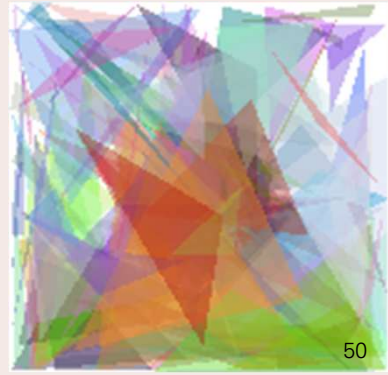
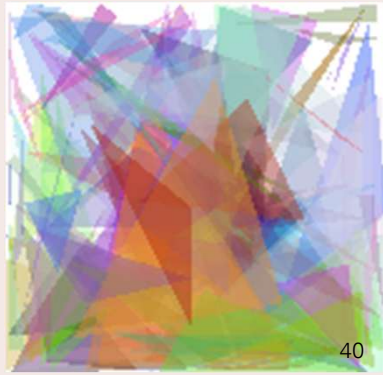
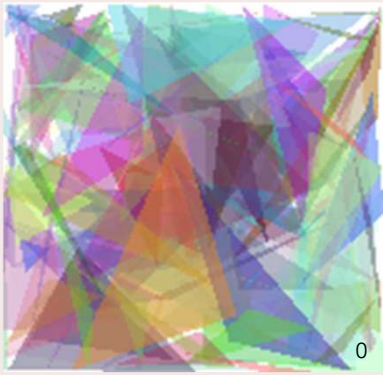
1780



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](#)