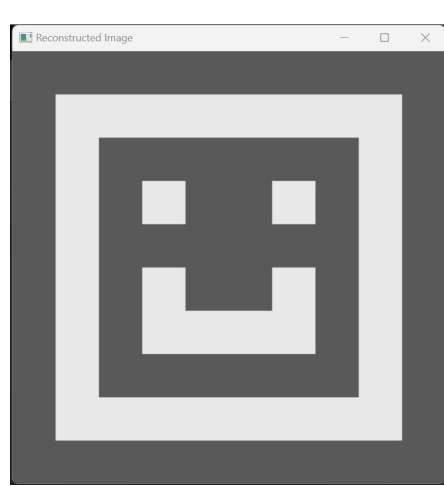
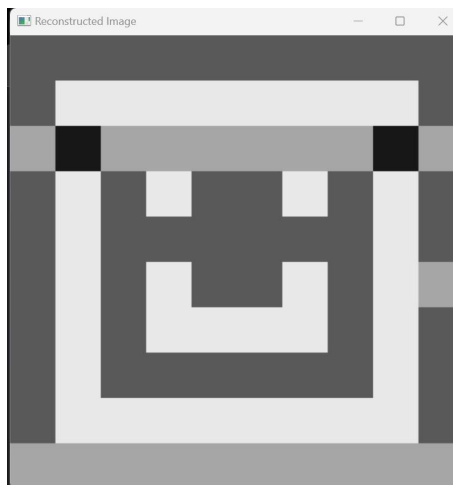
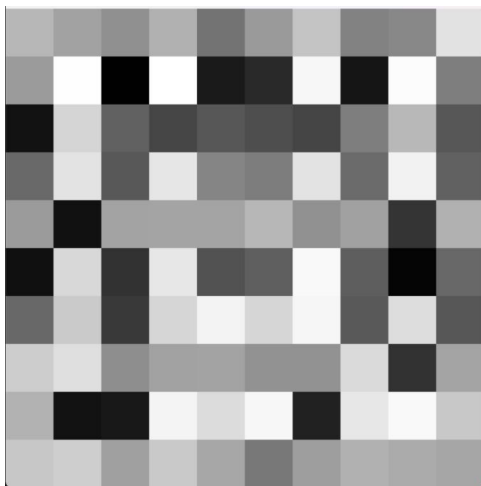
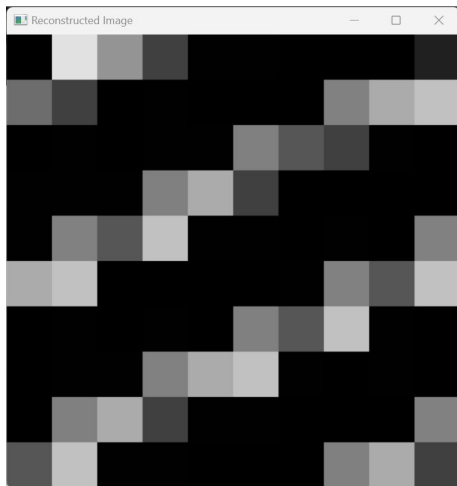


# Image Reconstruction Using GA

By Ines and Laura

# Problem Description

Our project aims to create an AI that will train to take and recreate an image, starting with simple two-colored images based on a genetic algorithm based on Charles Darwin's theory of natural evolution.

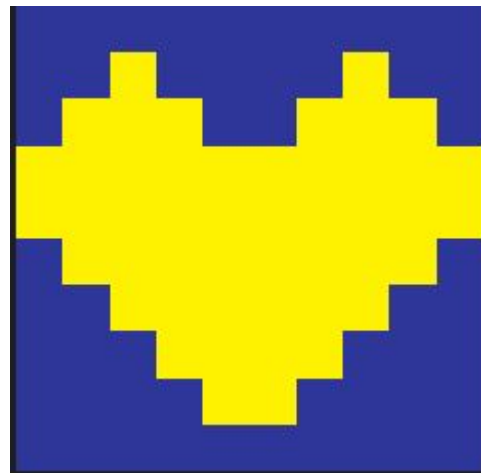
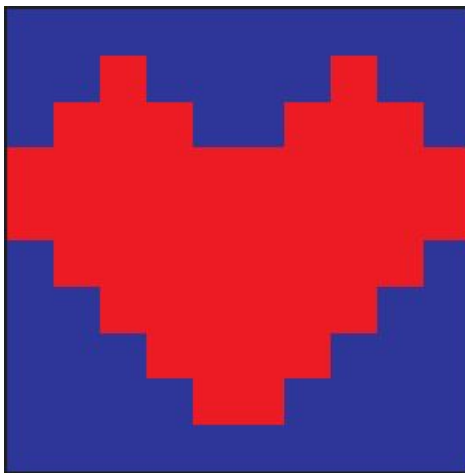
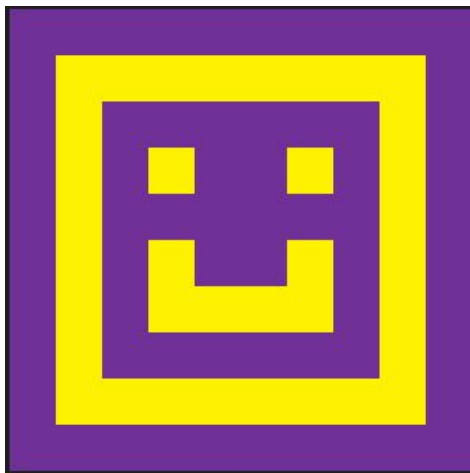




How we did it?

# Image Manipulation

First step was going to have a target image.

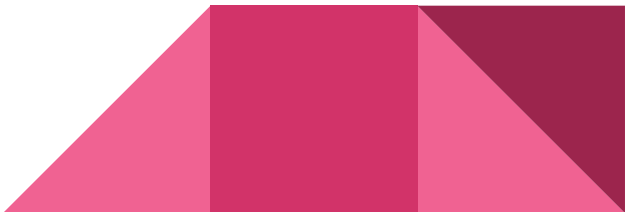


# Fitness

- Fitness Function: this function that measures how good a specific solution is compared to what we are aiming for.
  - Peak Signal-to-Noise between the 2 images to see the similarities. Gives us a number to tells us how good our solutions are
- Calculate Population Fitness: this function calculates the fitness of each individual in the population relative to a target chromosome.
  - It reshapes the individual chromosome to match the shape of the target.
  - Calculates the fitness of the individual chromosome relative to the target using the fitness function.



# Evaluation

1. Fitness Evaluation: By judging each individual's fitness, the algorithm gains awareness into how well-suited each solution is to the problem.
  2. Selection for Reproduction: Once the fitness values for all individuals in the population are determined it uses the fitness values to chose parents for reproduction.
  3. Recombination and Mutation: Parents go over crossover and mutation to generate offsting for the next generation.
  4. Iterative Improvement: Over successive generations, the population explores solution space, adapting and refining solutions to better fit the problem's requirements.
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# Representation

