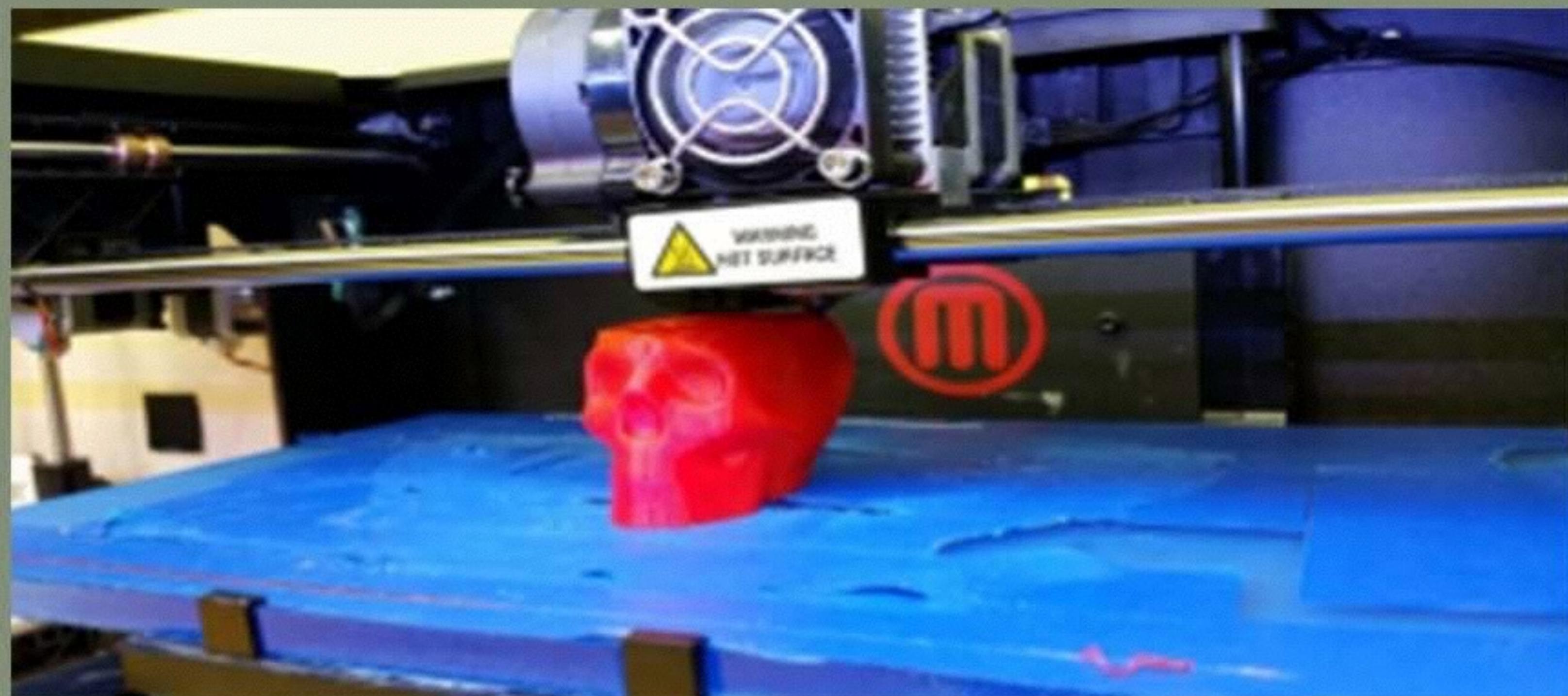


ACM CHICAGO Feb. 10 Presentation:  
Composers and Technology  
Seth Bousted Access Contemporary Music /WFMT



The impact of computers and technology on  
the art of composing music.

ACM CHICAGO Mar. 16 Presentation:  
Chicago Industrial Arts & Design Center  
Matthew Runfola



Computers, Robotics and Industrial Crafts  
Maker Space

April 13 - Dr. Mark Bennett of Bank of America/Univ. of Chicago  
Predictive Analysis and R

May 18 - Tom Basso of K&L Gates LLP  
Intellectual Property

June 8 - Maria Patterson of Univ. of Chicago  
Big Data topic

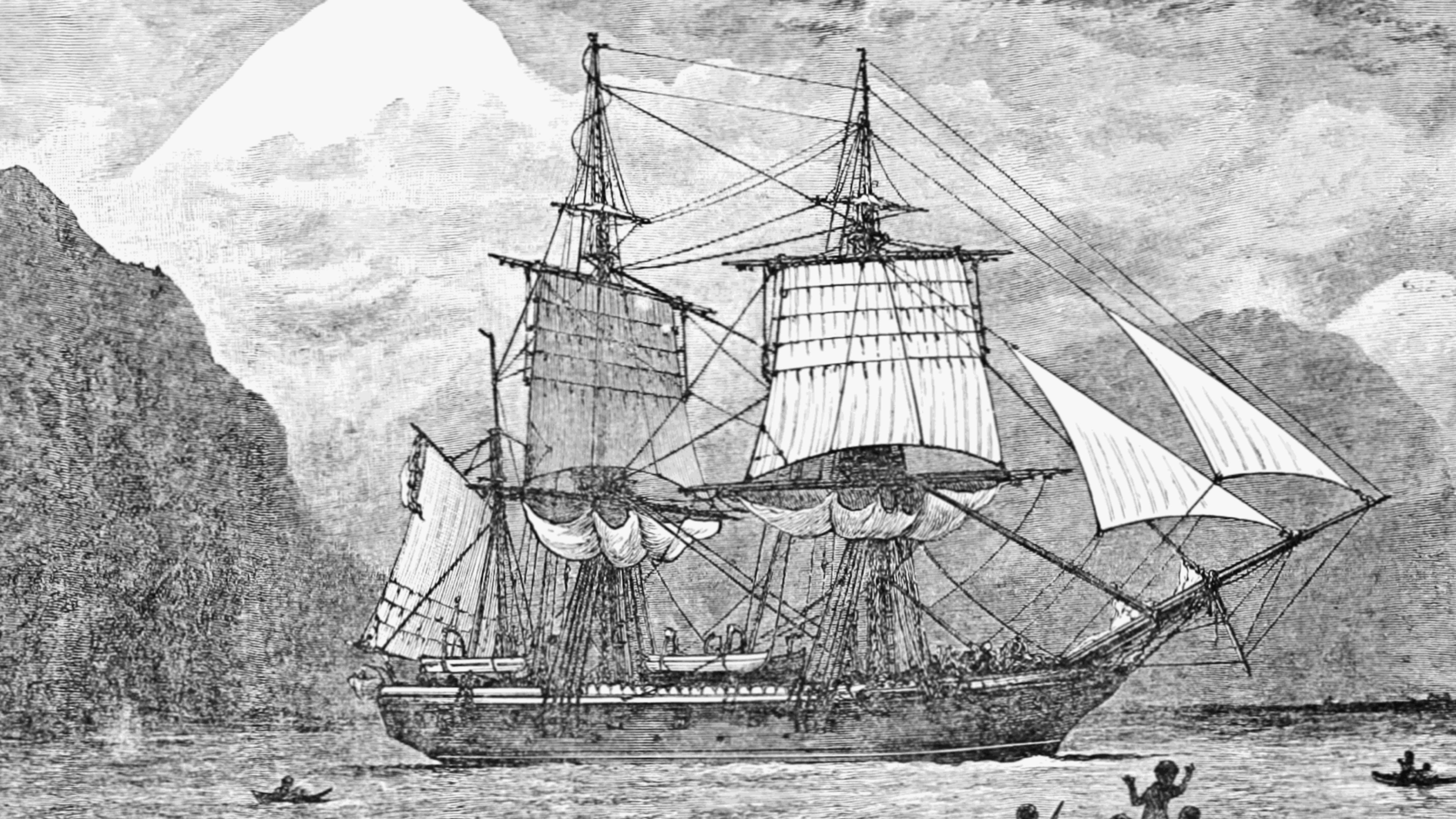
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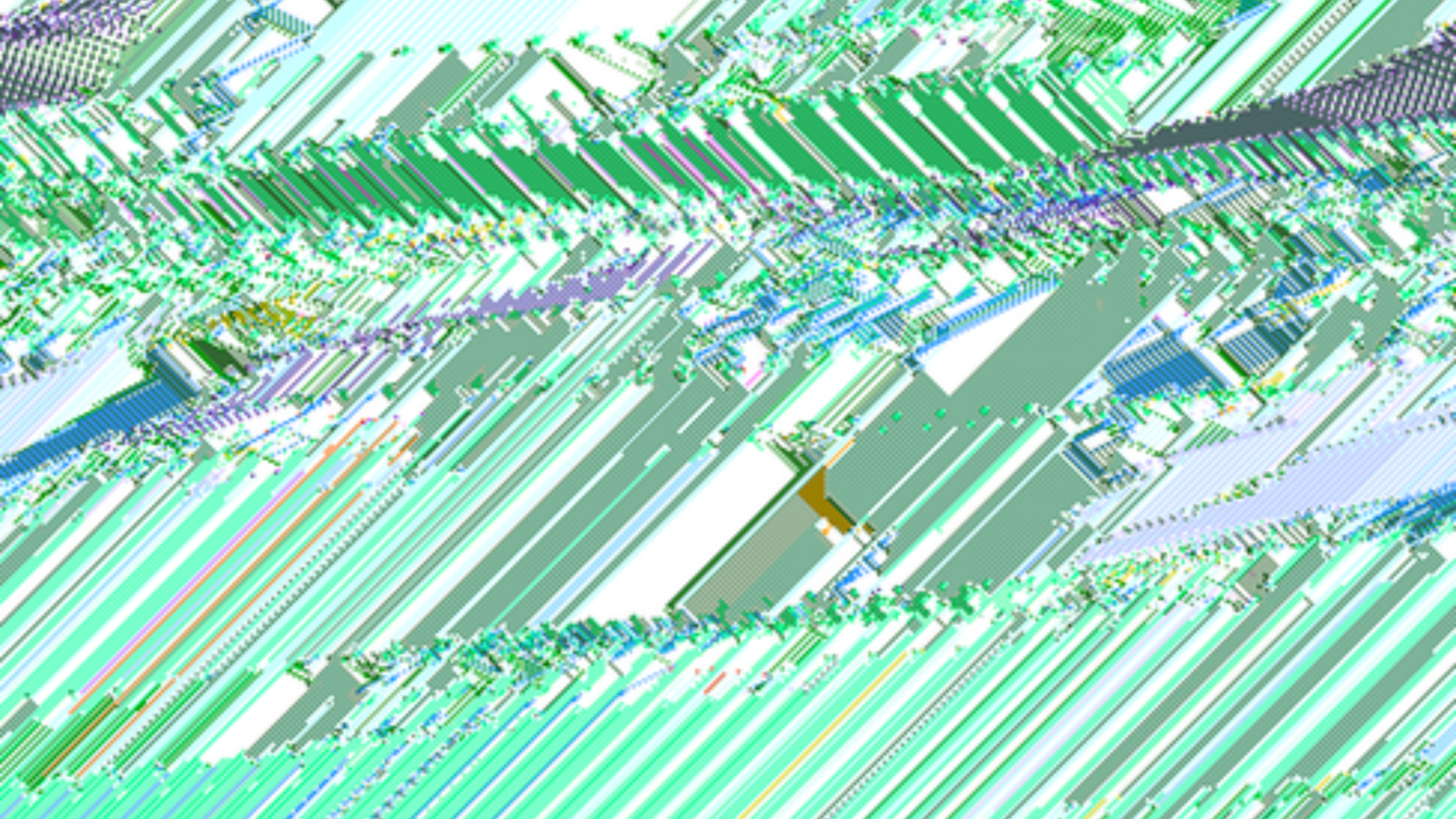
Mimicking Mother Nature

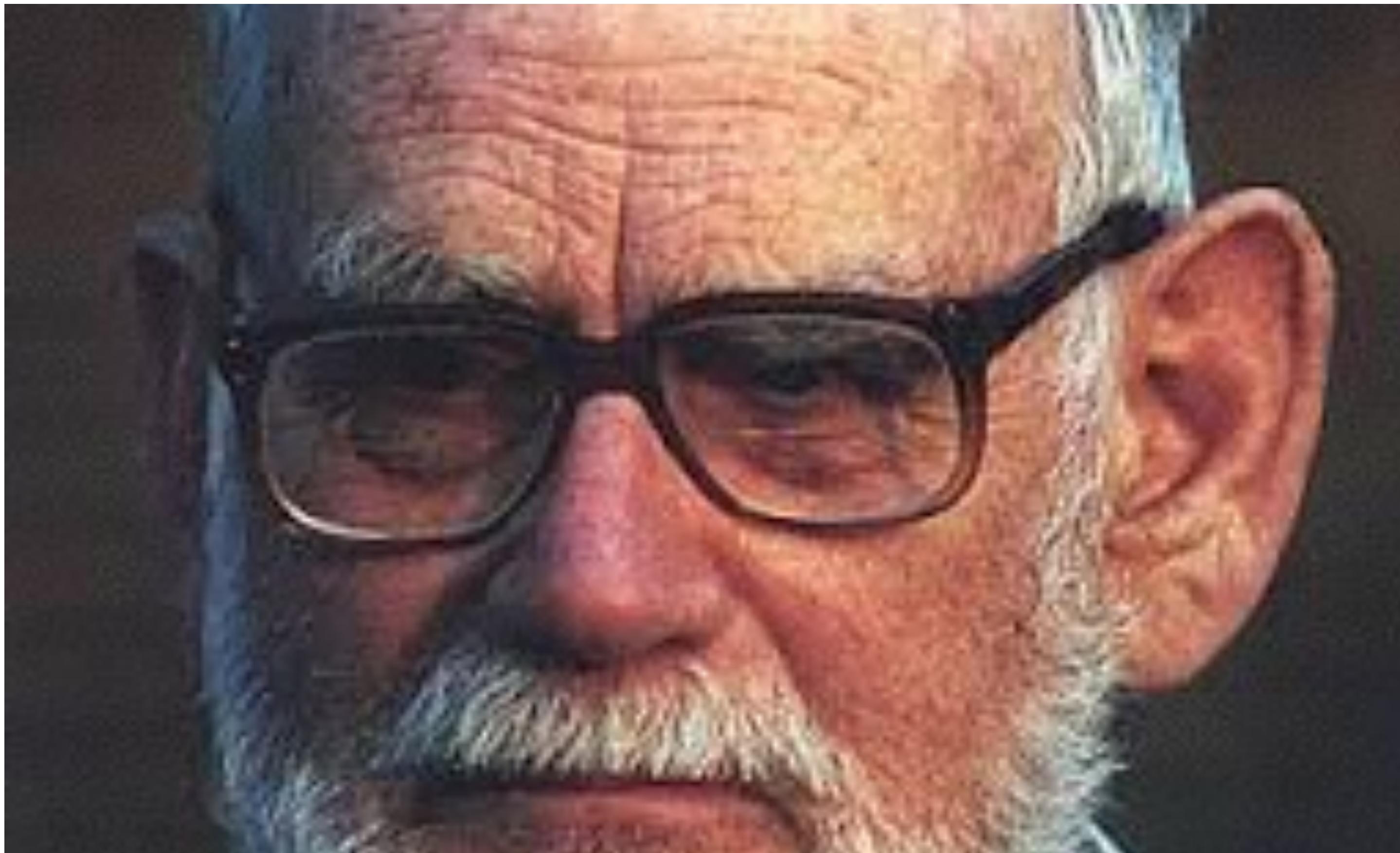
# What does @captainsafia do?

@PyDataChi

@dsfaco

@ProjectJupyter





# Computer Models in Genetics

Alex Fraser and Donald Burnell

@captainsafia from @dsfaco



# Adaptation in Natural and Artificial Systems

## John Holland

@captainsafia from @dsfaco



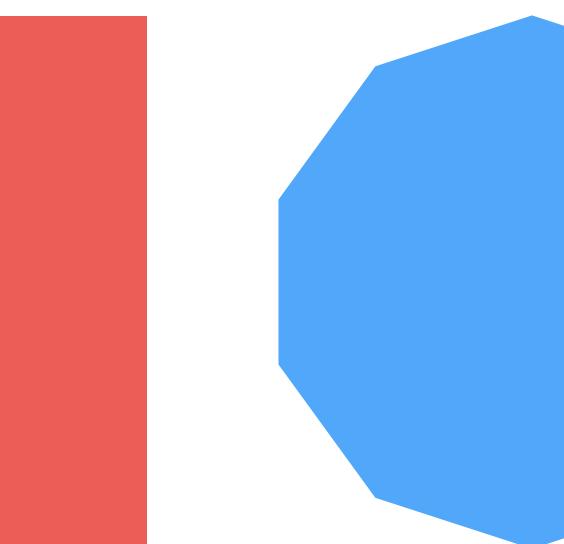
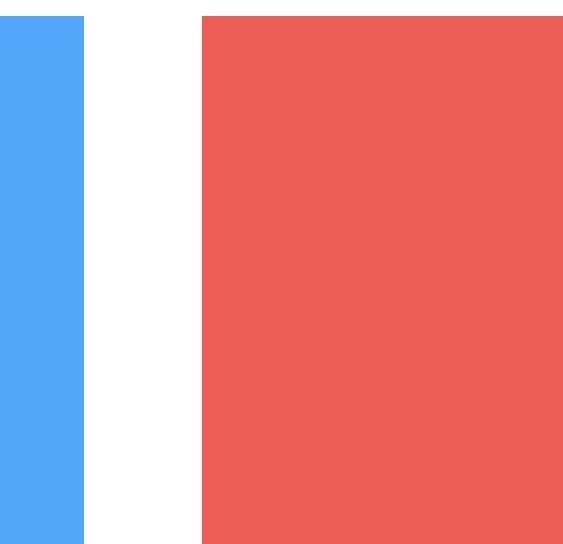
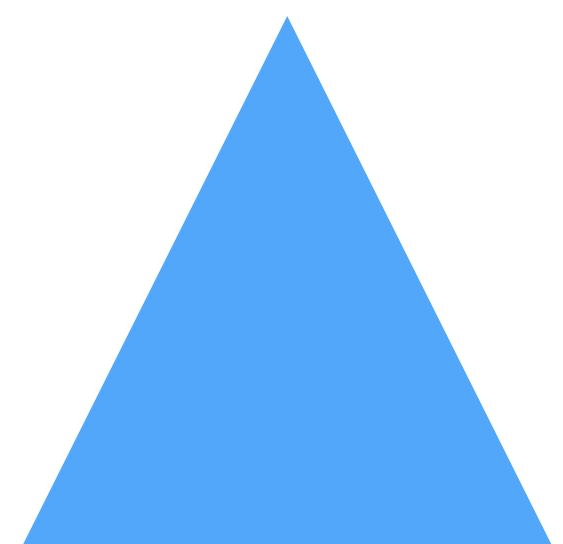
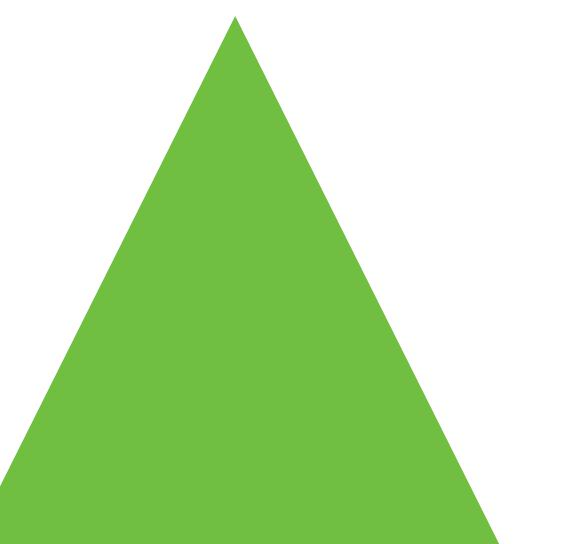
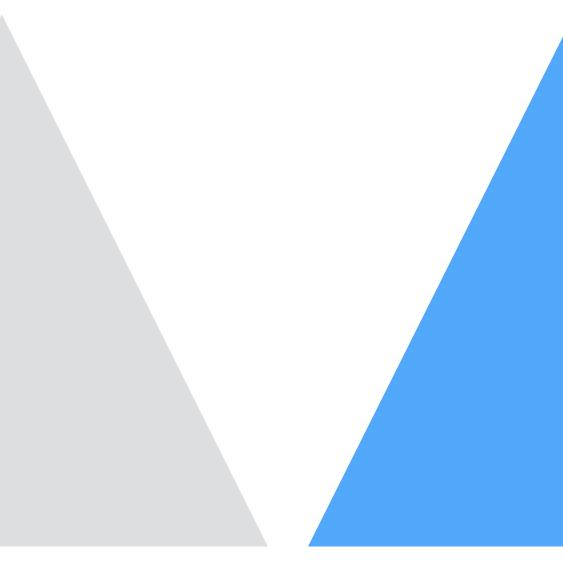
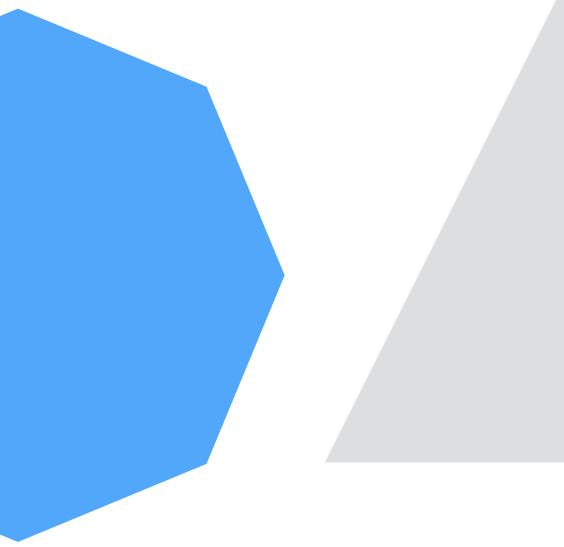
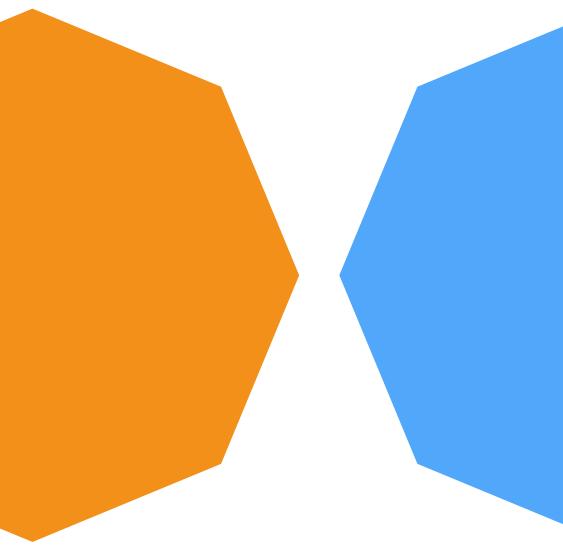
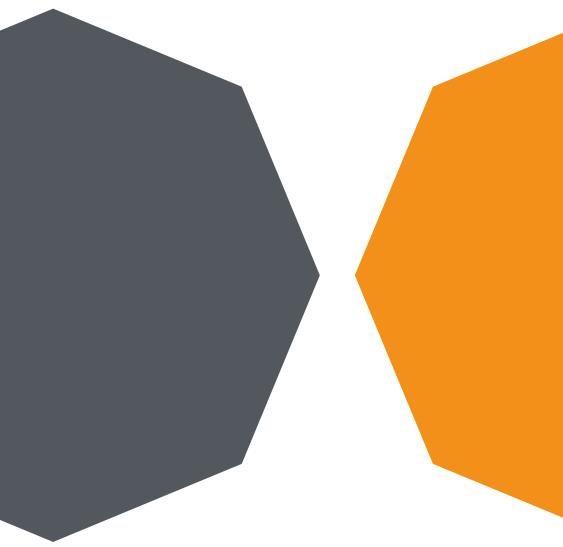
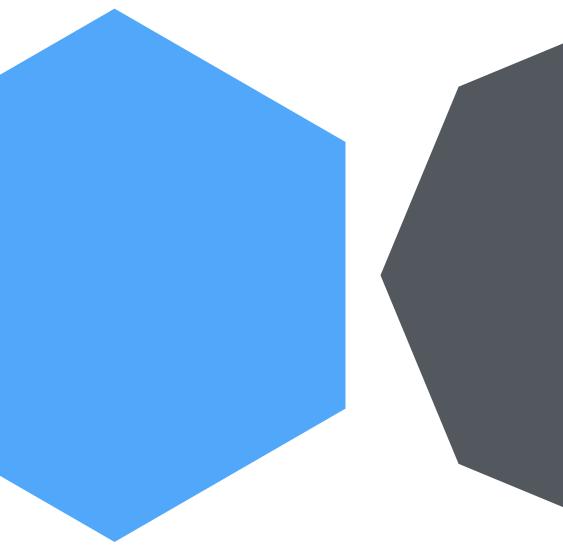
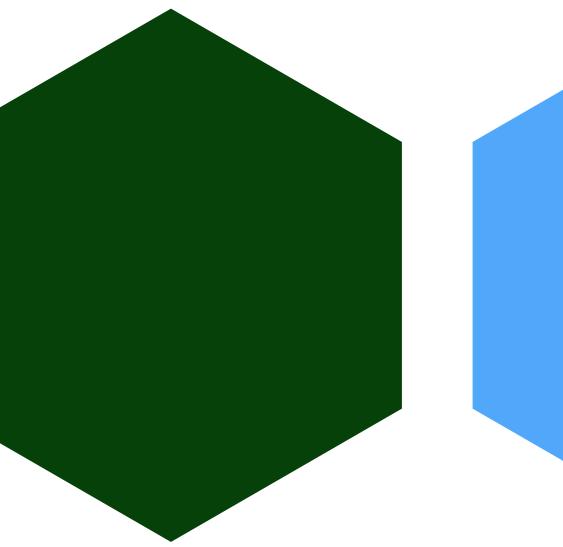
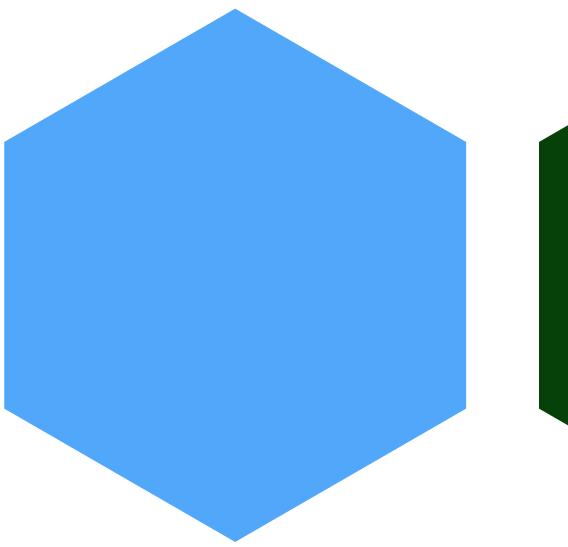
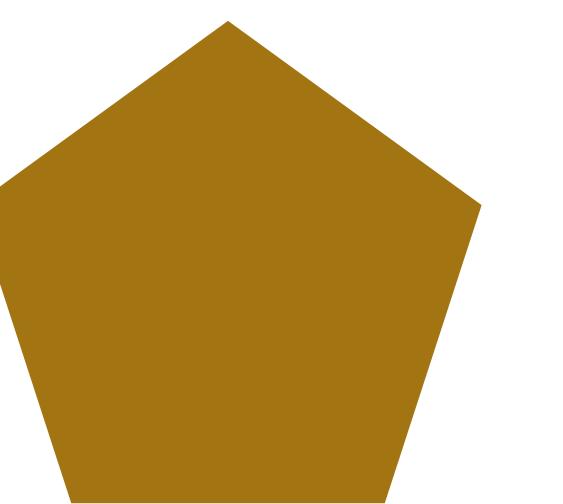
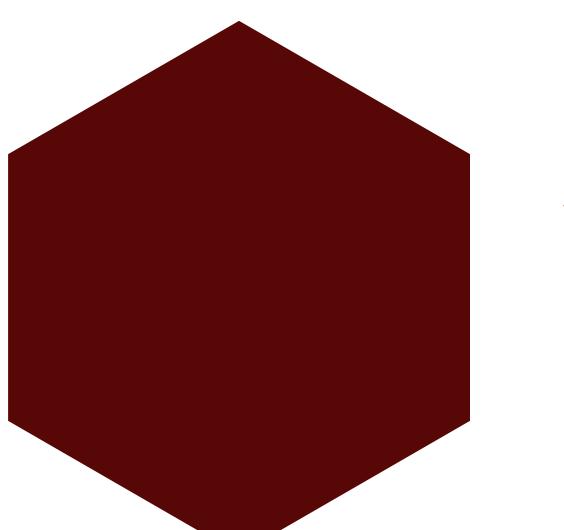
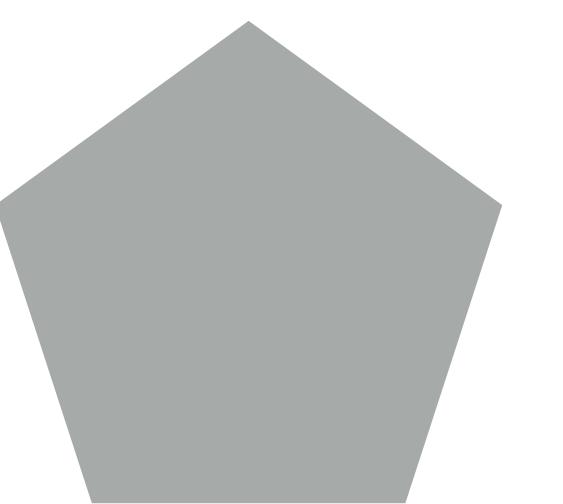
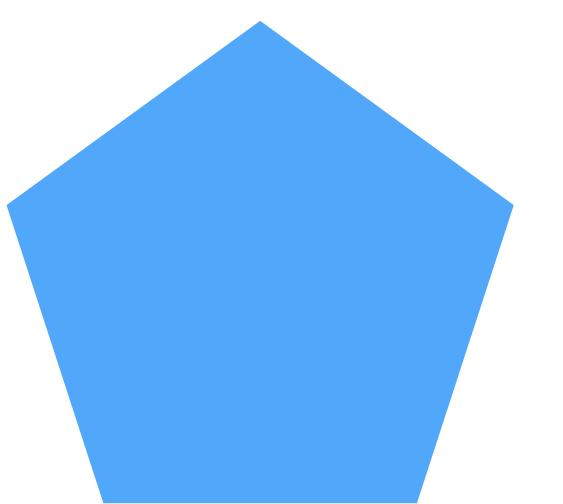
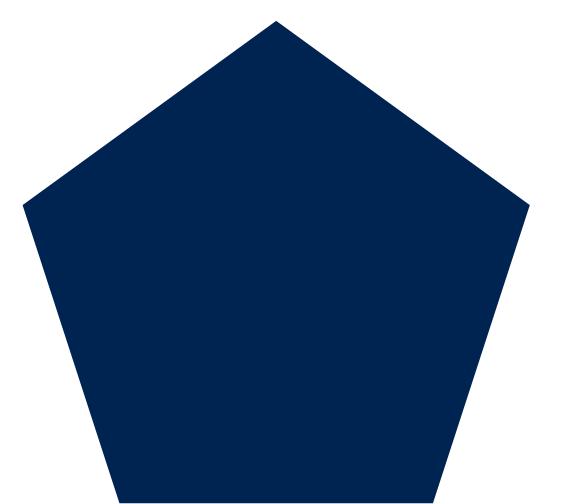
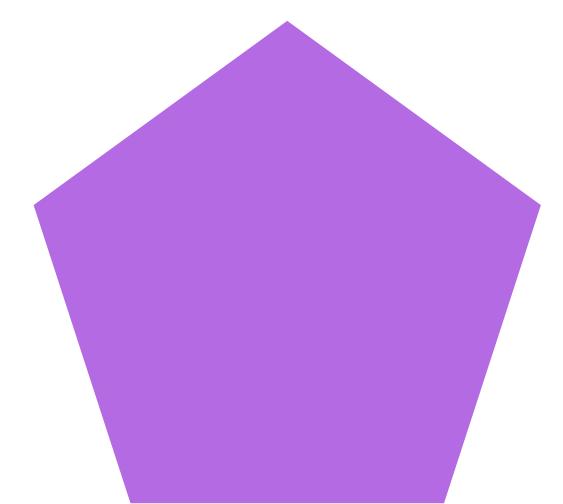
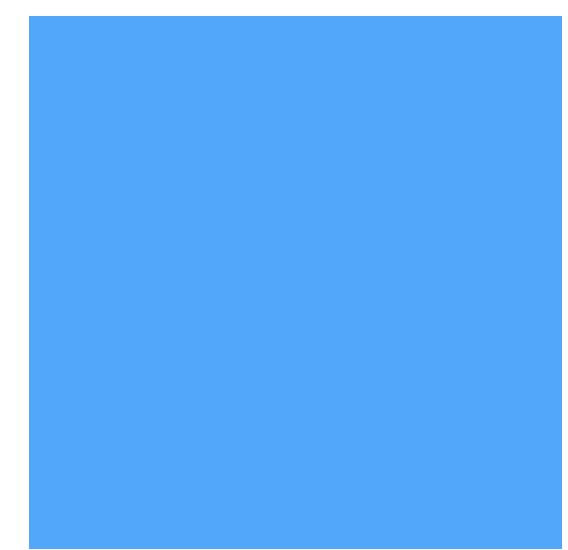
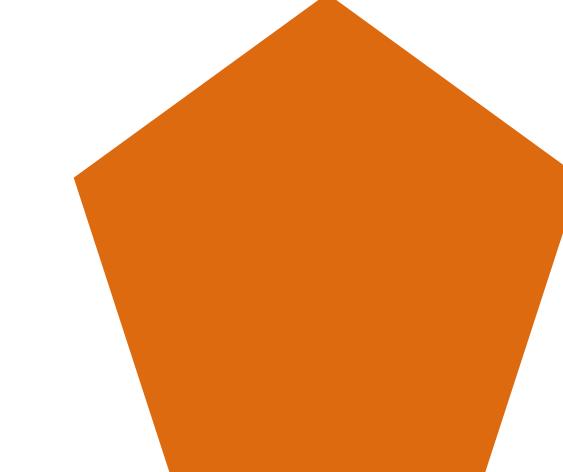
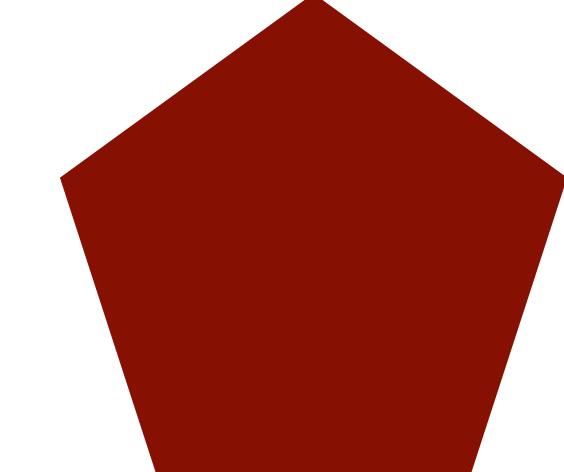
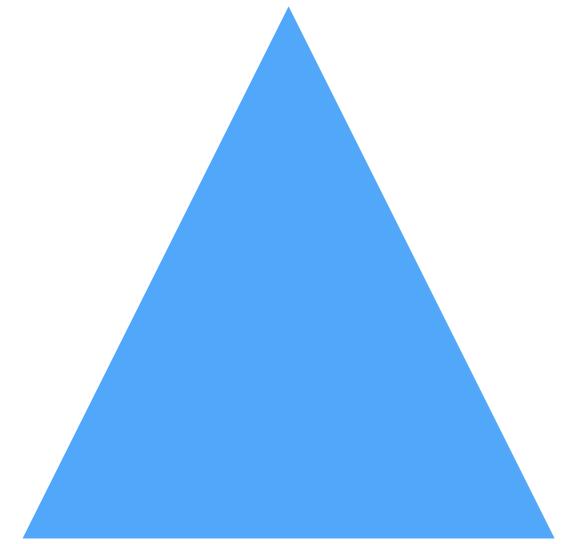
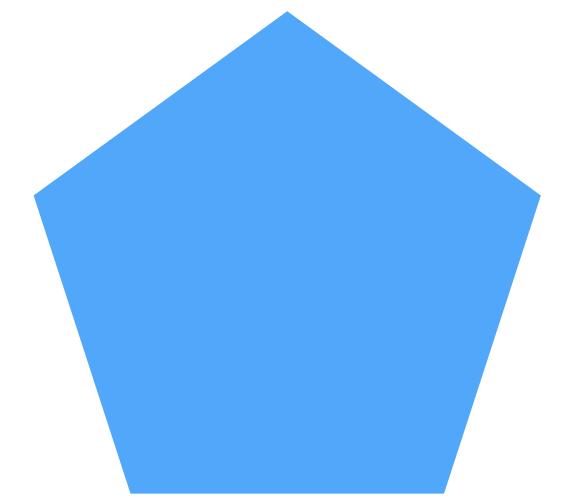
# Find the Best Solutions to any Optimization Problem

Wouldn't you like to know the best allocation of your limited resources to maximize your profits? Or the most efficient schedule to minimize costs? Or the most efficient remediation strategy to minimize environmental damage?

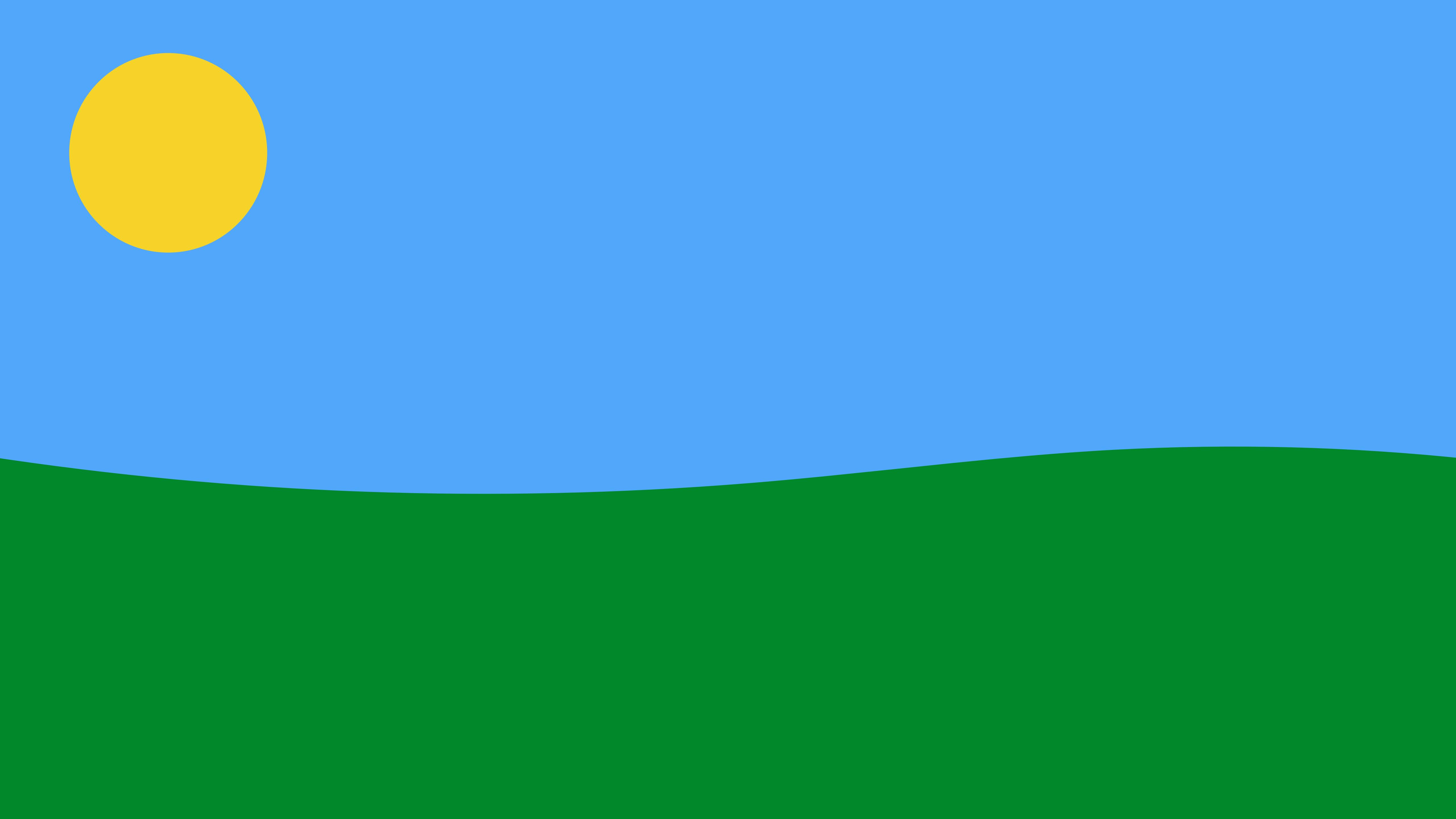
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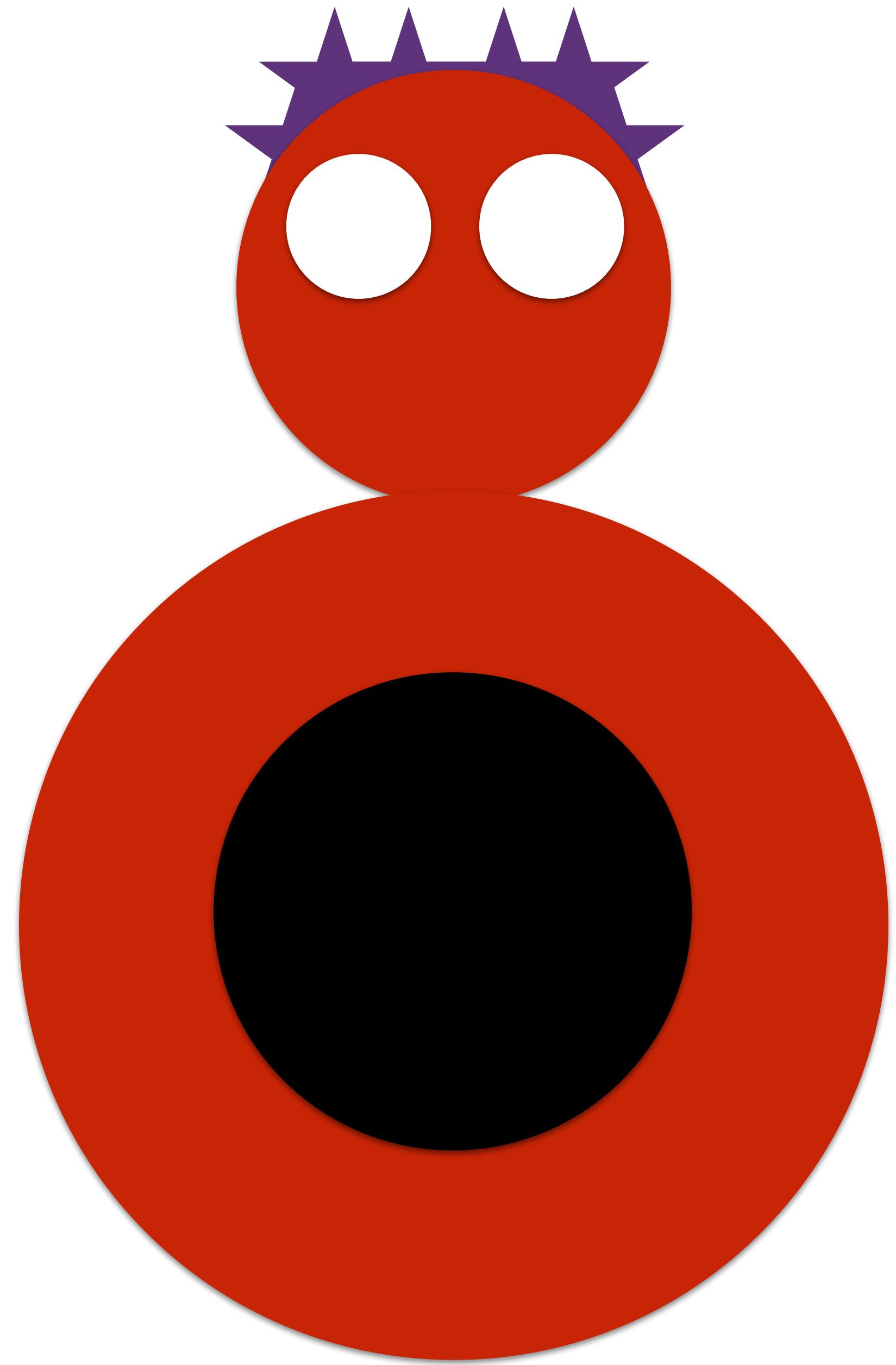
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# But how does it work?

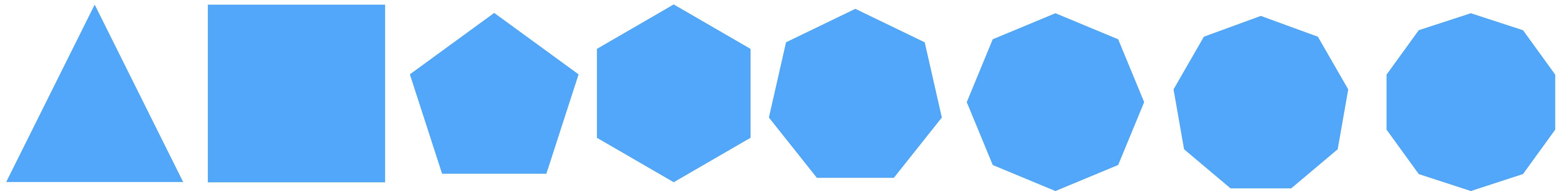


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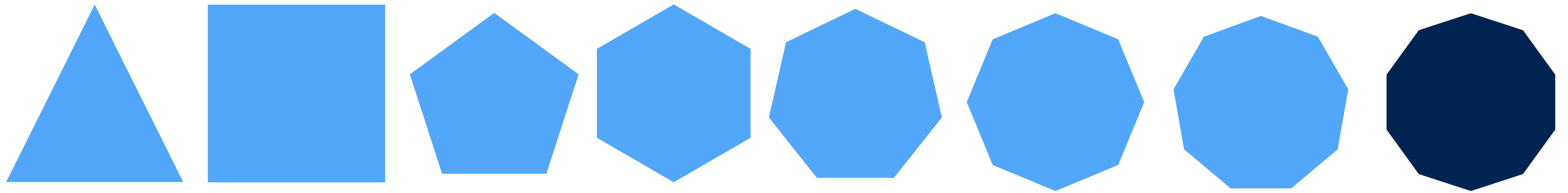




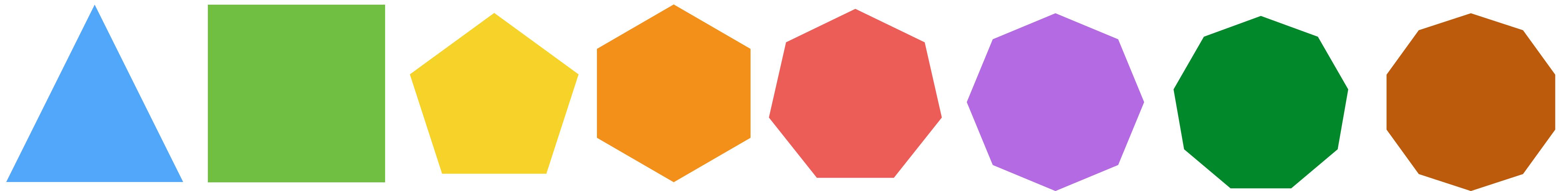
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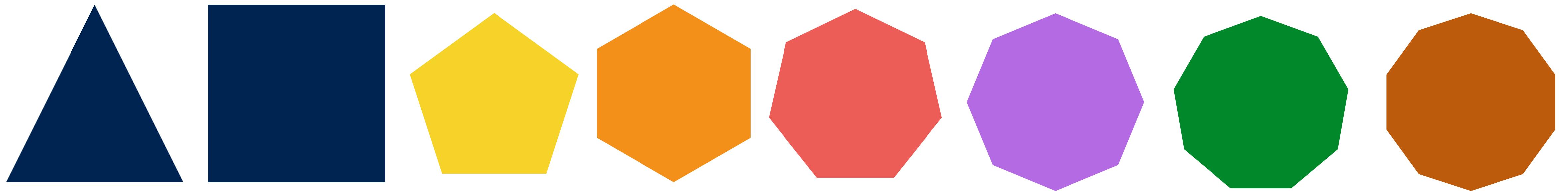
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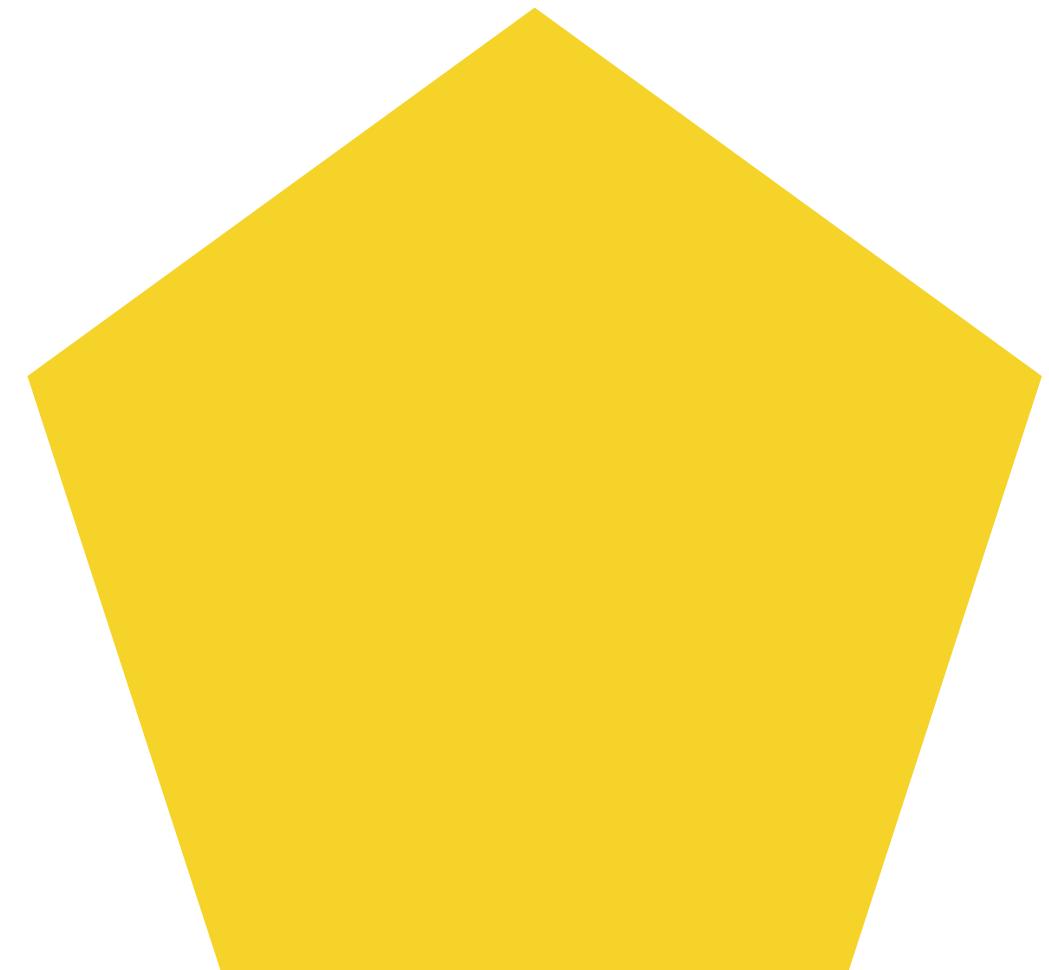
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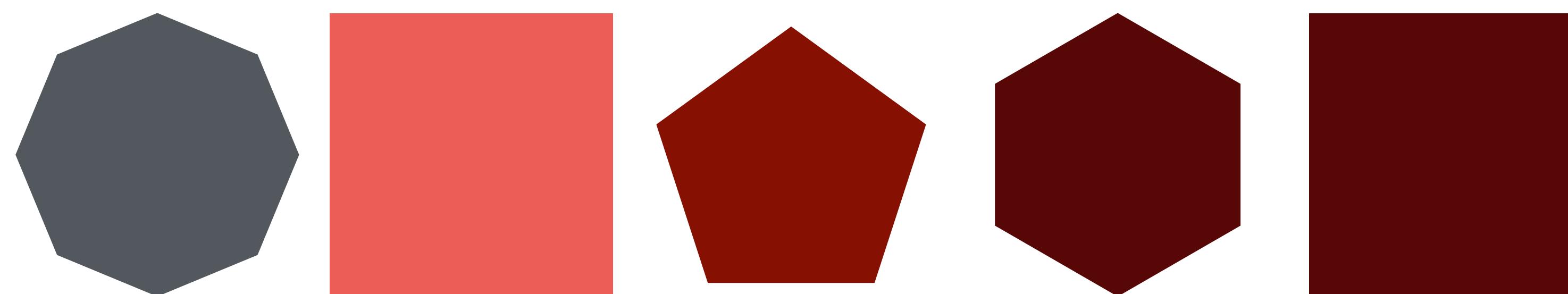
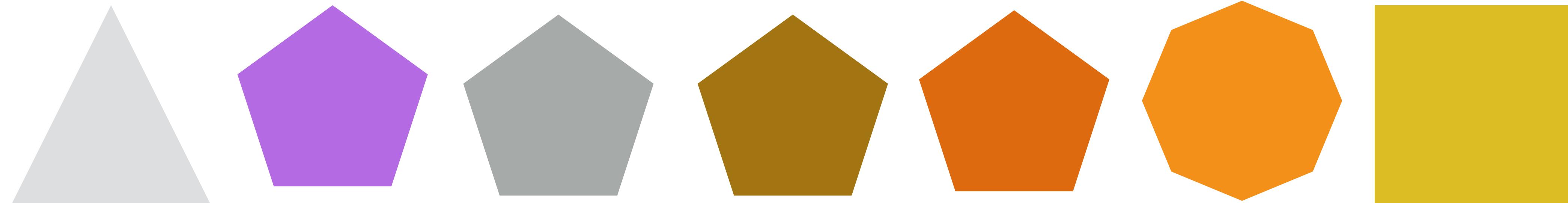
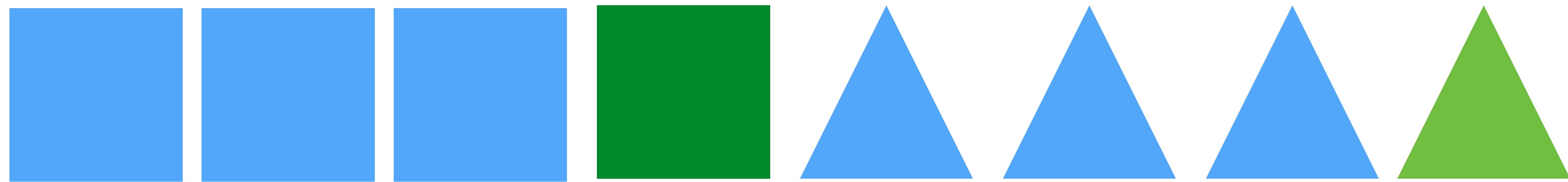
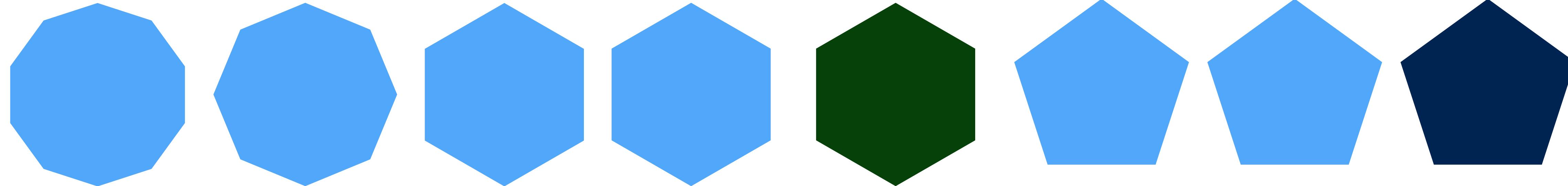
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*f(x)*

**(coefficient \* number of sides)  
+ (max(blue, green) - red)**



= [5, 240, 207, 64]



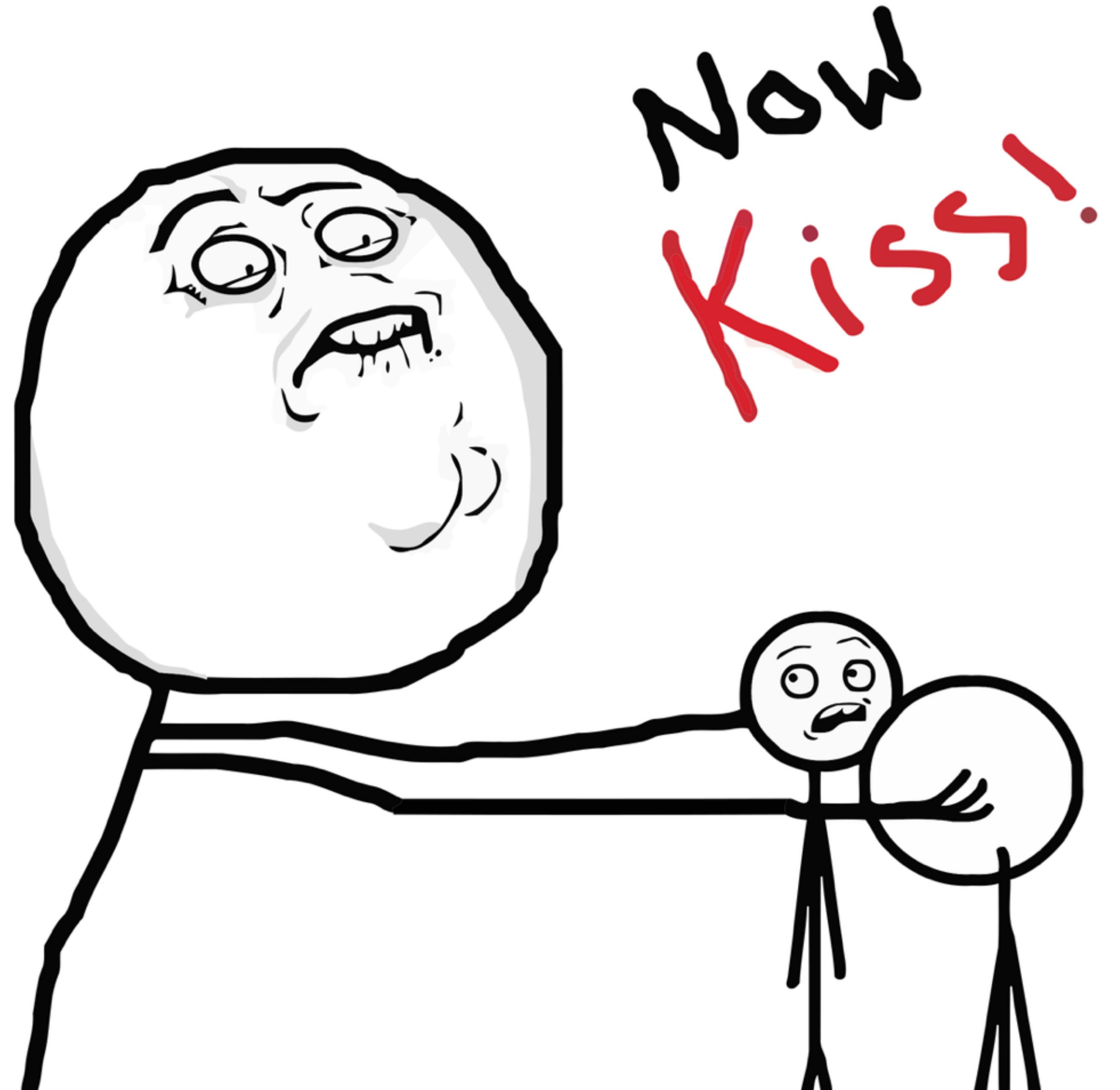
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**KILL THEM.**

**KILL THEM ALL.**

[memecrunch.com](http://memecrunch.com)

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Now  
Kiss!

**Rinse. Repeat.**

# Tune In

- Mutation rate
- Crossover rate
- Crossover technique
- Number of organisms to cut off at every iteration
- Coefficients of the fitness function
- Randomization in initial generation
- Population size
- Generation limit

# Let's code it!



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# Additional Resources

- Printing “Hello world!” using genetic optimization([Gist](#))
- Clever Algorithms by Jason Brownlee ([Book](#))
- Introduction to Evolutionary Computing by Eiben and Smith ([Book](#))
- Live demo code ([Gist](#))