Evolution Simulator

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Basic idea

- The basis for our project is to be able to simulate a species in a closed off environment testing how certain traits and environmental factors can impact the evolution of this species.
  - What set of traits will be favored higher to be able to survive in the environment?

Why?

To give us a better understanding of how resource supply and access can affect a population, and different outcomes of the population.

Also... It seemed like a really fun, cool project.

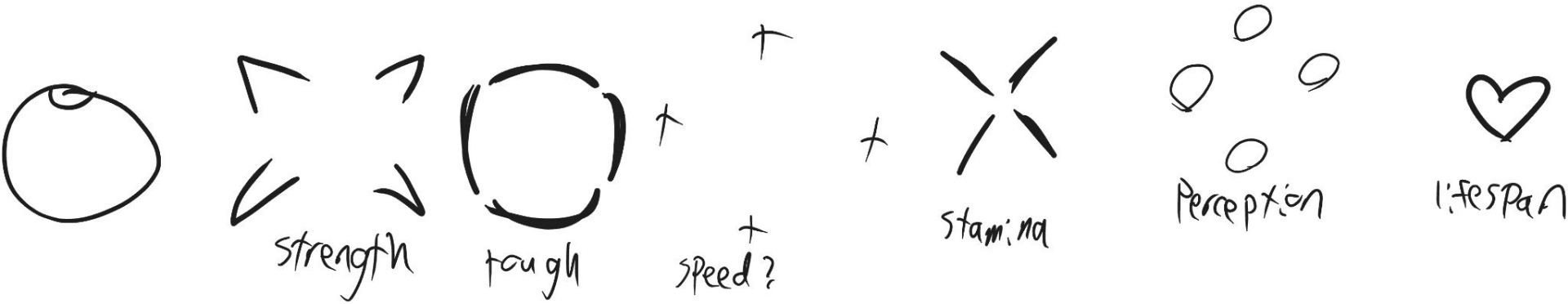
How it works

- We were able to code a logic system for our entities to be able to think relative to what is going on around them allowing for them to decide what is the best course of action.
- Entities contain various traits determining what they are capable of doing and explaining how they interact with each other.
    - Strength, Toughness, Energy Capacity, Perception, Speed, Lifespan
- Mutation possibility on every reproduction cycle.
- As entities mutate and evolve, these changes will be visible as it happens.

Traits

Stronger -> higher level predator
Touch -> more resistance to predators
Speed -> how far it can more per turn

Stamina -> lowers energy use
Perception -> ability to notice surroundings
Lifespan -> how long the creature lives



Technology used

- Our simulator logic was done using Python for its properties of working well with data structures and ability to rapidly prototype.

- The Graphical User Interface is programmed in Python using the PyGame Library

Challenges

- MATH
  - There were several math challenges, such as computing the path finding to food
- UI Design
  - (personally) I think graphics are very challenging to work with, especially with a library that mostly requires me to make everything myself (IE Buttons)
- Team Communication
  - Effectively describing and communicating proposed software code is really hard sometimes.
- Overthinking
  - A problem I am sure most everyone has. We initially kept thinking of crazier and complicated features we wanted to add.

Demo!