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Feedback and decisions

Feedback:

- *https://docs.google.com/spreadsheets/d/1IcRZa4vB03WA6sUEHuuB82DywQ6pzmyNiyWDehPRuSQ/edit?usp=sharing*

- *https://docs.google.com/forms/d/1mU0xI_YmMcO0CYVPM-GaIJZjQ4NnaPgeE4YhGiTNlt8/edit#responses*

Note: The second link is easier to read.

Options that we are considering for the post-MVP iterations, based on the feedback that we received:

- Consider weighing the various angle of attack coefficients of lift and drag differently.
- Consider sweeping the weights for crossover and mutation until we find ones that seem to yield the best results.
- Consider restricting the coefficients to yield shapes that match winds or “foils” found in nature.
- Constructing a 3D extruded version of the airfoil and test the airfoil in the wind tunnel

Some questions that we want to answer:

- If we run the algorithm for enough trials, will the algorithm always converge to the same airfoil (same coefficients)?
- How much will the population change if we create the population using various offspring coming from crossover and mutation? Which weights will yield the best results?
- How many generations should we run our algorithm for?
- Which weights should we provide on the coefficient of lift and drag for the various angle of attacks?
- How could we restrict the coefficients to mimic foils mimicking nature - bird wings, dolphin fins, etc.?

Review process reflection

We think this architectural review went better than the last one because of the hands-on activity. It gave people a more hands-on insight into what we are doing with our evolutionary algorithm; however, something we could have done better is cut down the timing and try to have multiple generations. By doing this we could have emphasized the process of developing a new generation which was what people addressed for the vast majority of the questions section of our presentation.

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People seemed to get a little lost in the activity, specifically where people had to consider a “good airfoil” when first developing it. Due to this, we should have spent more time on it and gave slightly more explanation. The difficulty with this is the timing cap of 20 minutes we had.

Conversely, some of the pitfalls for this architectural review were that we didn’t get as much feedback on our project than the process of developing and using an evolutionary algorithm. Our intention was that if we were able to mimic the processes of our algorithm people would be able to give more informed feedback, but it resulted in more questions than direct feedback. However, because we were asked many questions during the questions and answers section, we gained insight into what we should do from their questions. Specific examples of this are weighing the angle of attack coefficients of lift and drag differently.