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Progress report for week 14

Code Improvements:

I updated my code according to the advice from the last meeting
(tqdm, glob, naming conventions,...)

Differential Evolution:

I made the simulation of the populations trajectories run a lot faster, which made it possible to further improve the estimation accuracy. But it still takes quite long to compute large numbers of generations(e.g. 300) and population sizes(e.g. 100). Especially benchmarking takes a long time because of that.

I realized that the algorithm does not perform well with a changing 3D start position and velocity, so I implemented a way to change the start position with only one number. This is possible as we know the 2D position on the image. With that we can determine a line in 3D space on which the real position must lie on. This greatly improved the performance(right now its at about 10 cm avg error for most tested projectiles).

I did not really get to try out how well it performs with spin yet. It seems to be common that even for trajectories without spin, the estimation contains spin, which negatively effects the accuracy before the first bounce. I will explain that in more detail when we have our meeting.