Training machine learning models requires users to select many tuning parameters. These parameters are hard to select. This project aims to eliminate these parameters by using information inferred from training algorithm trajectories. This will make training machine learning models less time consuming and more user-friendly.

Preliminary results: training CIFAR-10 with a CNN. Comparison is with a range of different fixed step sizes and with our method called DoG, note step sizes not displayed diverge.

What is a trajectory cue?
- The trajectory refers to the path of an algorithm
- Trajectory cues are information that we get from running the algorithm
- An example of a trajectory cue is the distance travelled by the algorithm
- There has been no research explicitly studying how trajectory cues can be used to choose tuning parameters of stochastic optimization algorithms

Potential Impact
- The most efficient way to remove tuning parameters from SGD is a major outstanding problem in optimization theory
- Better understanding of the differences between between adversarial and stochastic optimization
- If we can translate our theory into practice this will make training machine learning models faster and easier