Investigating Difficulty & Improving Trajectories

Samuel Roberts

Problem Scenario

- Lunar Lander test case problem

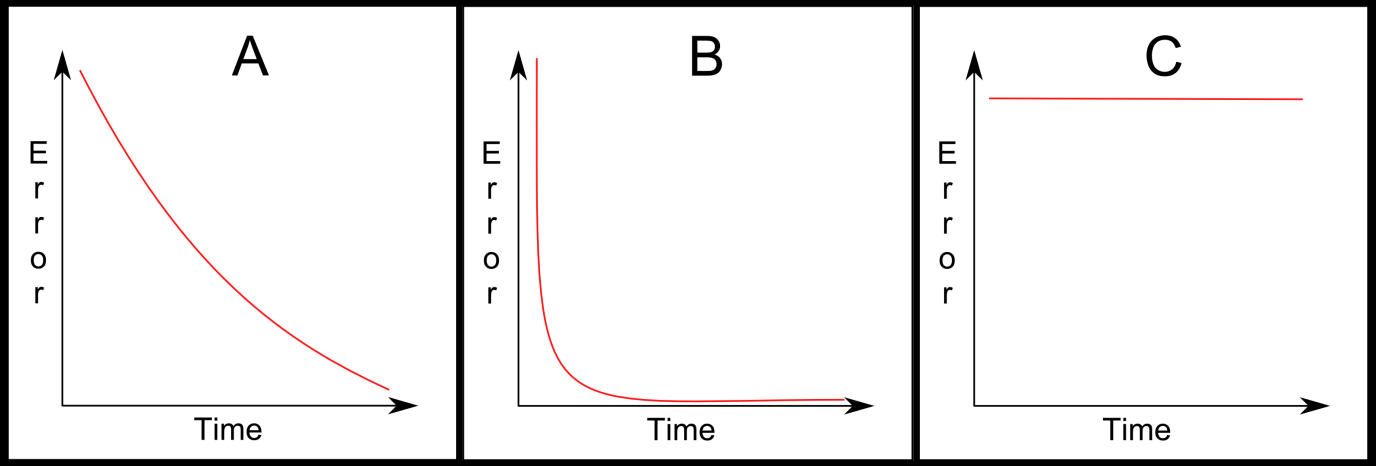
A Reminder

Problem Scenario

- Attempt to land:
  - Under a velocity threshold
  - Close to a designated landing pad
  - Facing upwards
  - With minimal fuel expended
- Parameters of simulation can be adjusted
- Weights of sub-conditions can be adjusted

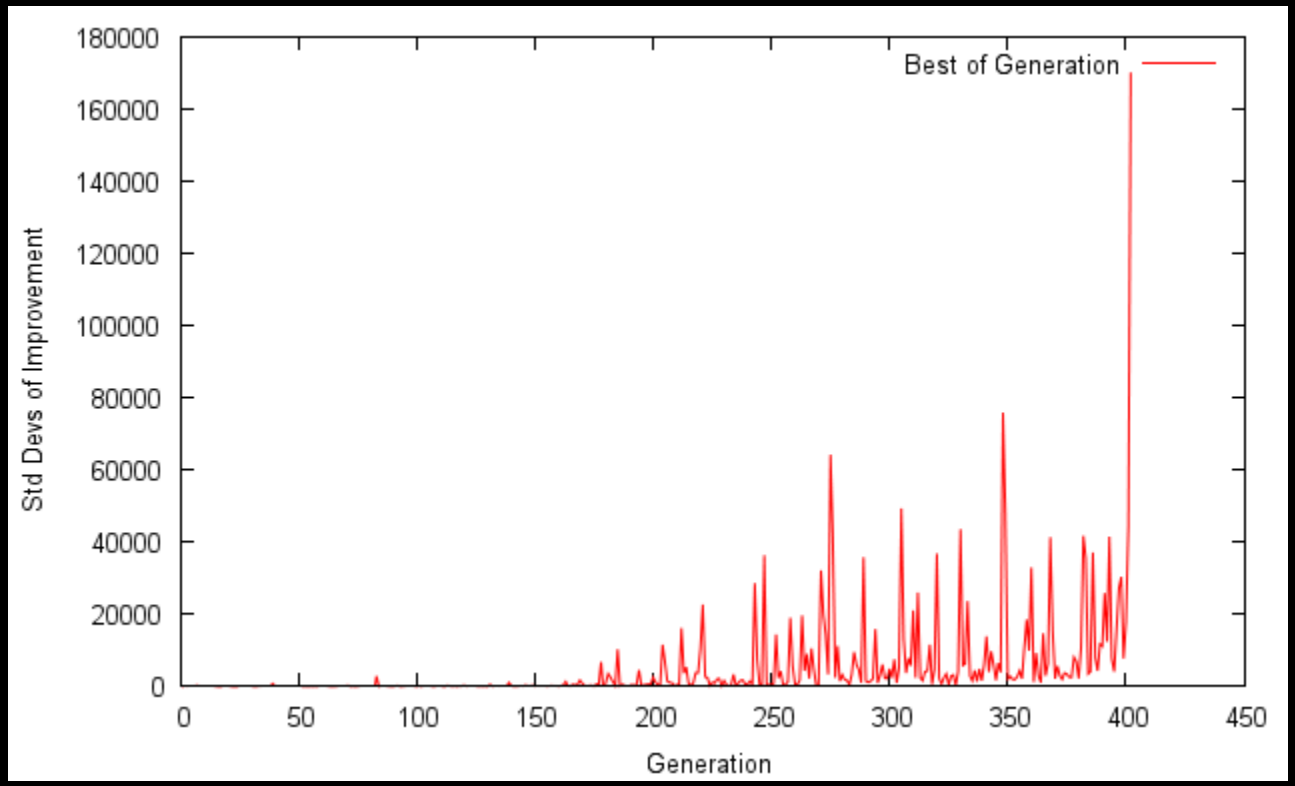
Interestingness

- Idea of interesting progress relating to interesting problems
- Based on number of standard deviations of improvement over time



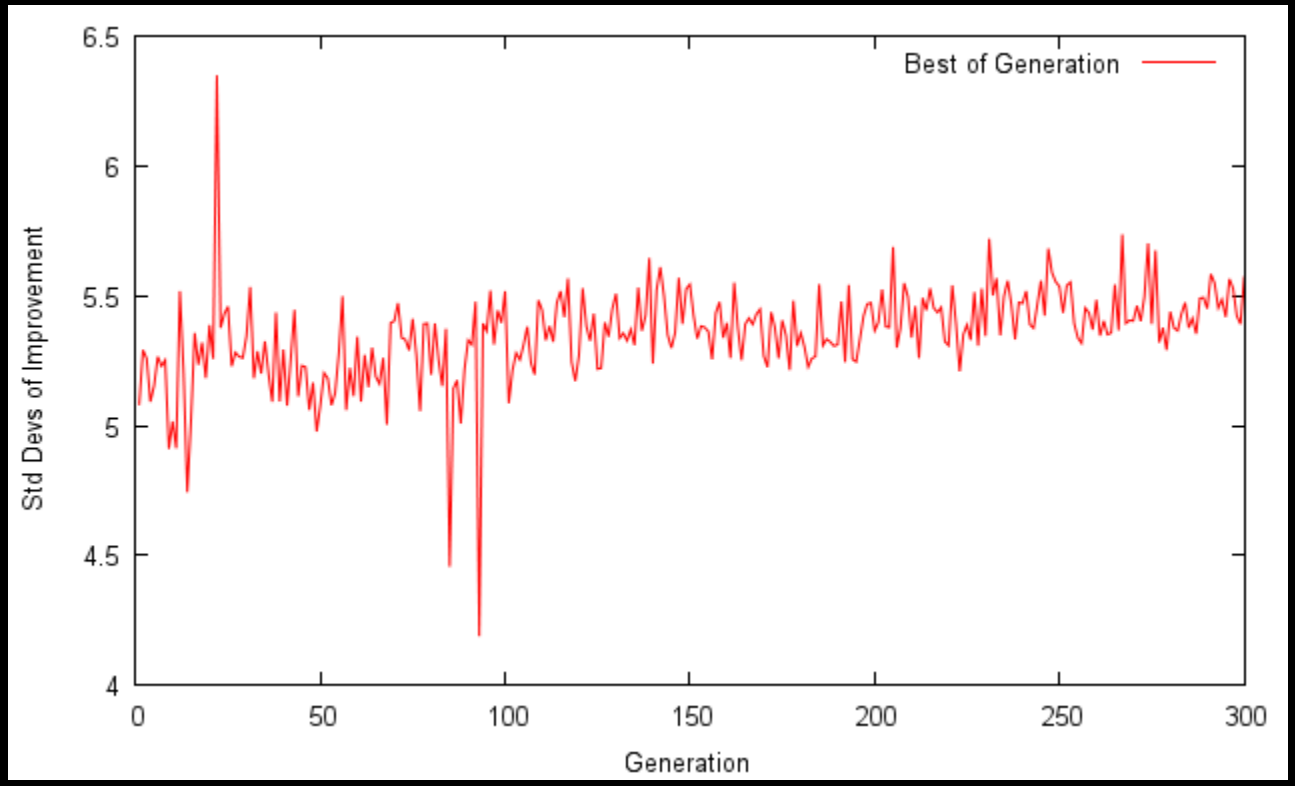
Results

- Measure has some flaws to it



Results

- Some parameters don't have as much of an impact as expected, such as velocity loss



Trajectory Planning

- Works based on swapping individual actions within sequence
- Faster than simulating for each new change
- Requires knowledge of the model
- Currently optimises final destination placement
- Does not account for noise or environmental changes
- Massive room for improvement
- Could also optimise for velocity and time

Thanks for Listening

Now for another demonstration!