

## 1) optimizing the Ackley function

SRS • 2D case will get closest to min in 100,000 iterations

- 4D case will take longer iterations and its loss progression will not be as steep
- 6D case performs worse than 4D

LRS • I picked a starting value of  $[0.5]^d$  because the global minimum of the Ackley function is at  $[0]^d$  (relatively close).

- LRS performed better than SRS, except for the 2D case
- chose sigma value of 0.3 for 4D and 6D and sigma value of 10 for 2D

## ELRS

- performed the best in 2D case
- chose same starting value of  $[0.5]^d$ ,  $\sigma = 0.3$
- performed similar to LRS in 4D, 6D case

## 2) Modelling the Nile River

I picked  $K$  to be 3, my  $\theta$  vector was  $(1/750, 1/750, 1/750)$  and my Sigma was picked using  $\text{runif}(3, 400, 500)$

- I altered the step size a little bit and I am getting a nice downward exponential loss progression for both  $L_1$  and  $L_2$  loss function plots.