Fri, May 3, 2024

* HW 6 due tonight
* Course Evals open until Sunday
* Take-home final assigned, due next Fri on D2L, 11:59pm
* OH next week
  - Wed 12-1
  - Thurs 9-11
  - by email

## Topic 14 - Neighborhoods in Continuous Space

Previously: moving a square - bad in higher dimensions

moving a sphere - much better

(1) Muller method

Other ways to move around space:

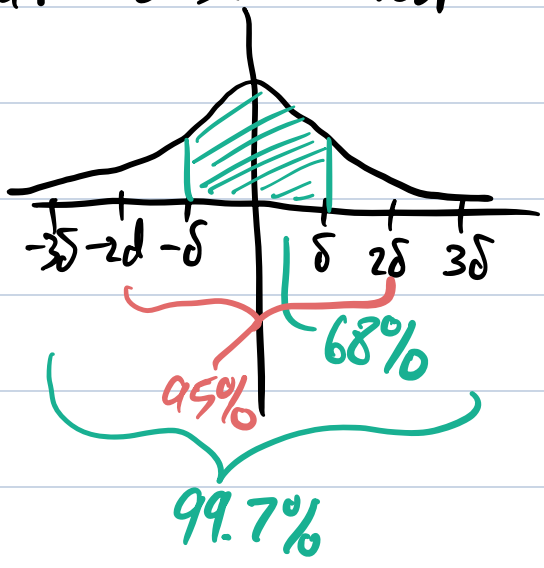
(2) Gaussian Random Walk

For each component, add a shift drawn from a normal distribution

$N(0, \delta)$

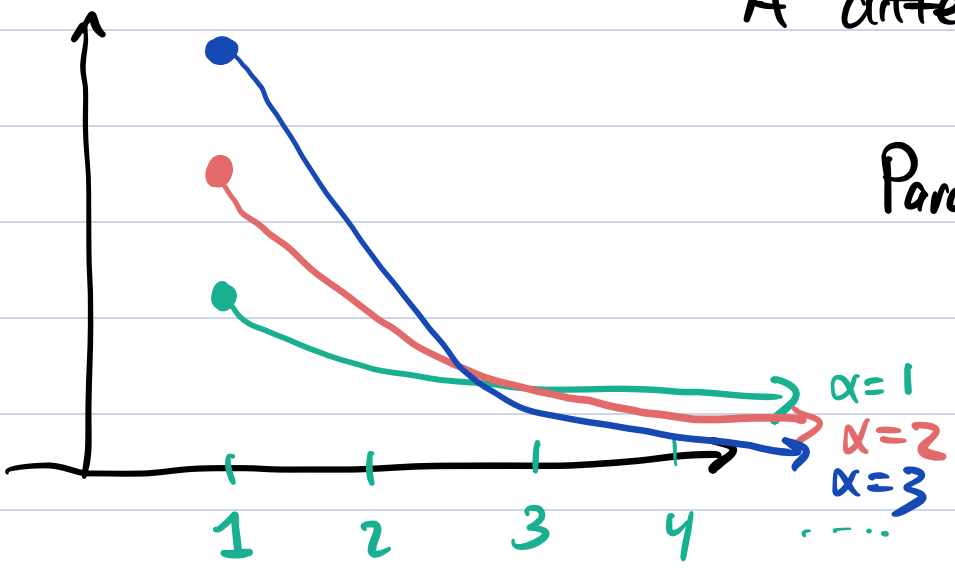
mean = 0 $\quad \delta$ = std dev

"thin tails"




3) Lévy Flight

A different distribution.




Parameter $\alpha$

$\uparrow$

any real # $\geq 1$

smaller $\alpha$ has lower prob. of picking #s close to 1, but higher prob of picking large #s

much thicker tails than Gaussian

The dist. above only gives #s $\geq 1$, so we need to modify it.

To pick a # from the modified dist:

* Pick a # $r$ randomly uniformly from $[0,1]$
* Define $s = r^{1/\alpha}$
* Make $s$ pos. or neg. with 50-50 probability.

Inspiration: travel patterns of predator animals. Many small movements, occassionally big movements.