

Binomial

$$P(m|n, \alpha) = \alpha^m (1-\alpha)^{n-m} \frac{n!}{m!(n-m)!}$$

Simulation:
 $x \sim U(0,1)$
is $x < \alpha$?

Normal

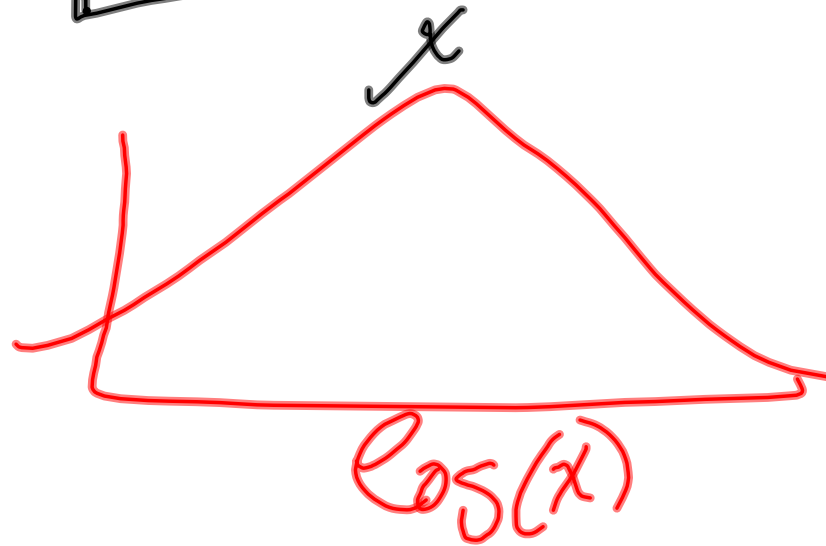
$$p(x/\mu, \sigma) = \frac{e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2}}{\sigma\sqrt{2\pi}}$$

Central limit theorem

Simulation:

implement CLT

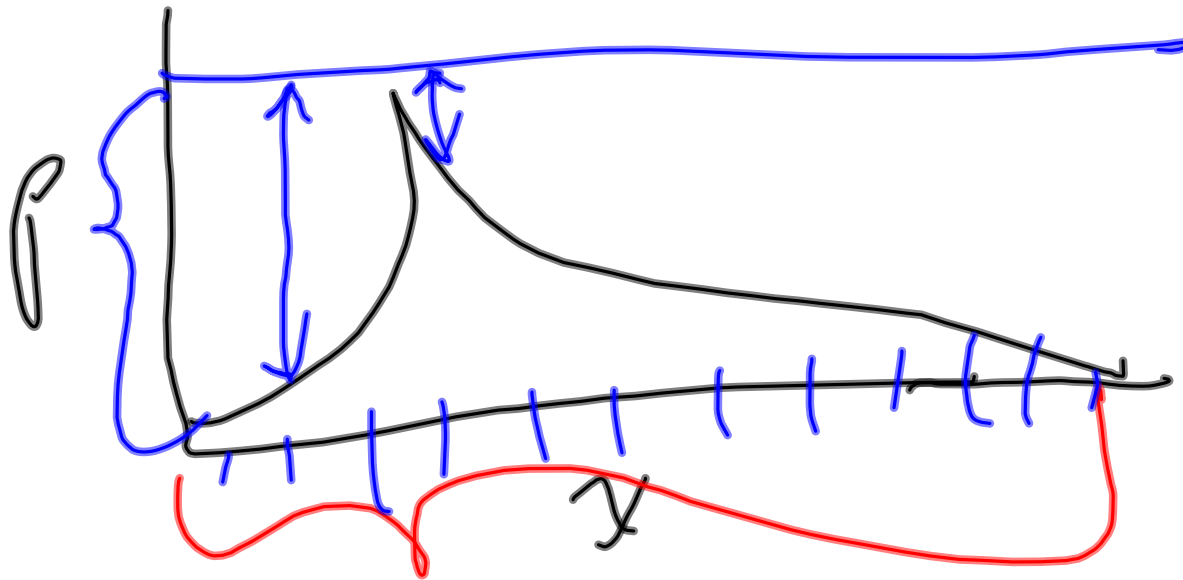
Lognormal



Random number generator strategies (From U building block)

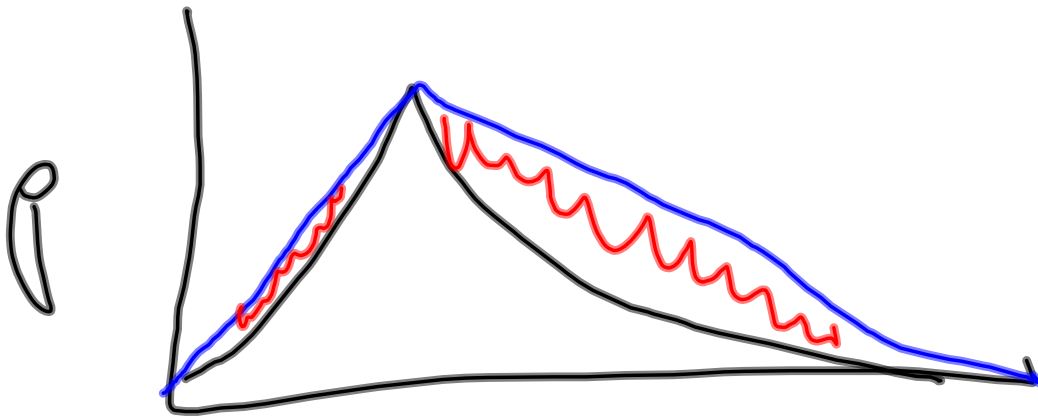
- I. Mimic process
- II. Apply some transform to U
- III. "Use the distribution function"

III.a. "Removal"



1. U on that domain
2. discard with $P(1-pu)$

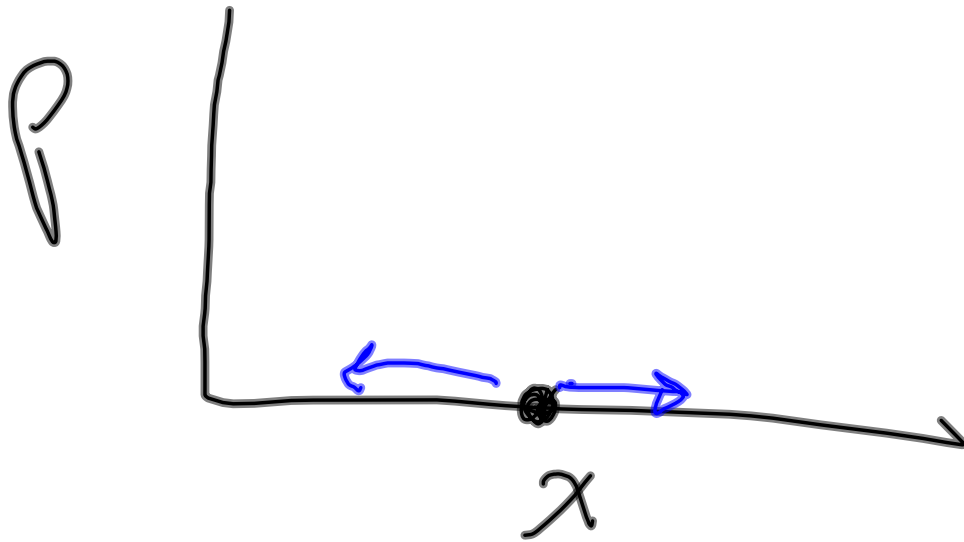
II b. "Tuned Removal"



1. Simulate approximation
2. Reject with frequency
approx - actual

III c. "Metropolis algorithm"

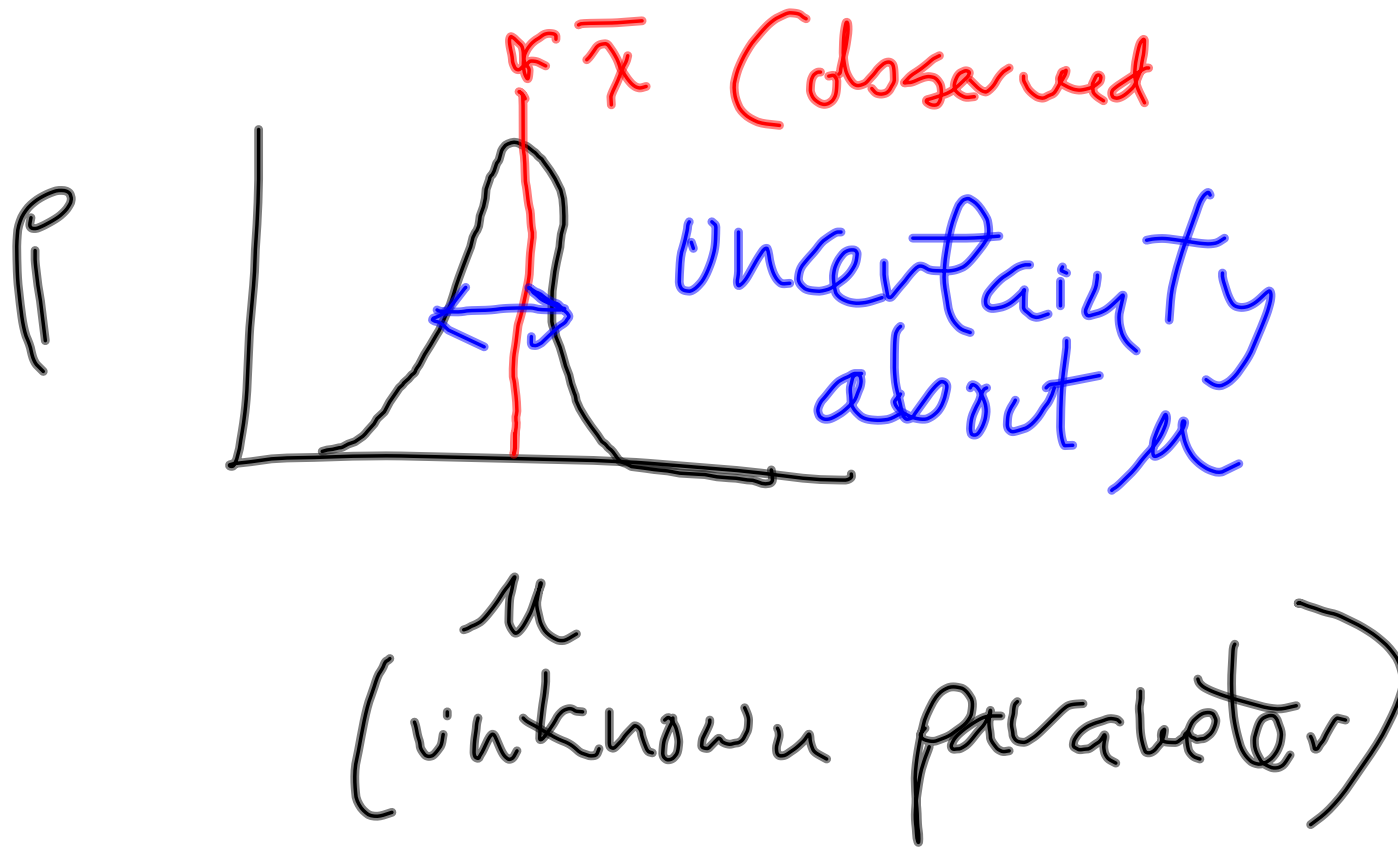
MC MC



Inference From Sample

Example

What range of true
values (unknown) of
 μ are consistent
with observed \bar{x} ?



predictive distribution $f(x)$

