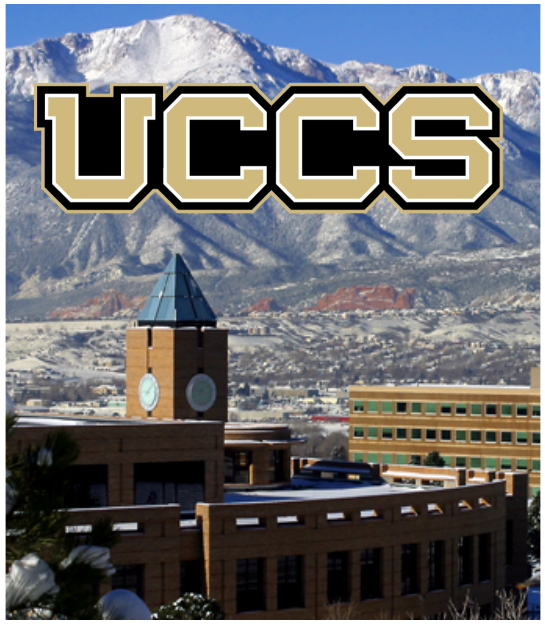


Cryptography and
Information Theory

Information Entropy

Sang-Yoon Chang, Ph.D.

Module Objectives

1. Deterministic vs. Random

Module Objectives

1. Deterministic vs. Random

2. Randomness/Entropy Examples

Module Objectives

1. Deterministic vs. Random

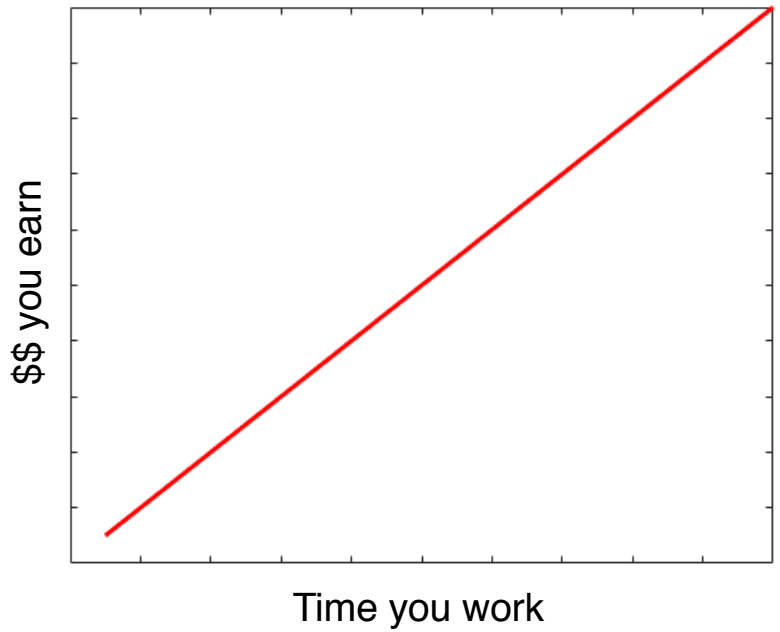
2. Randomness/Entropy Examples

3. Information Entropy Equation
(Alphabet Size and Distribution)

Deterministic process:

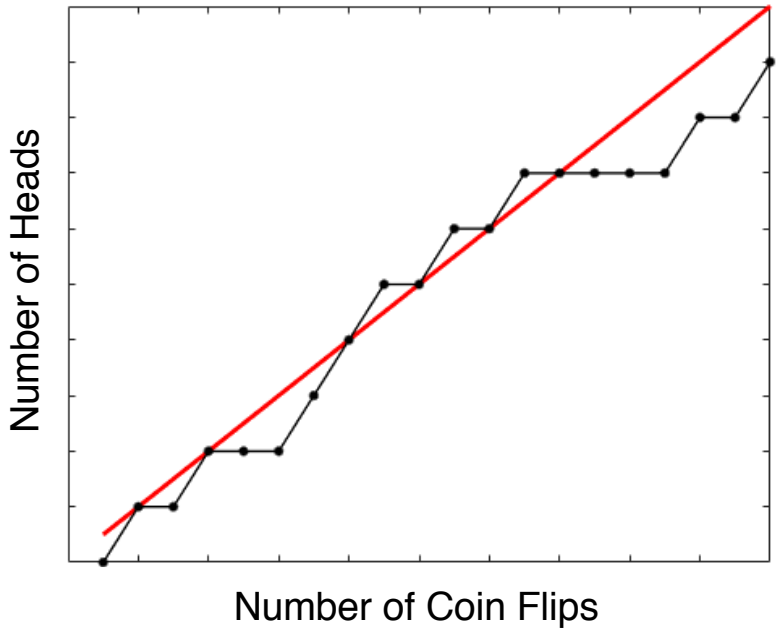
The outcome is known with certainty

(occurring with a probability of 1)



Random process:

Multiple outcomes possible and they occur randomly (modeled by a probability distribution)



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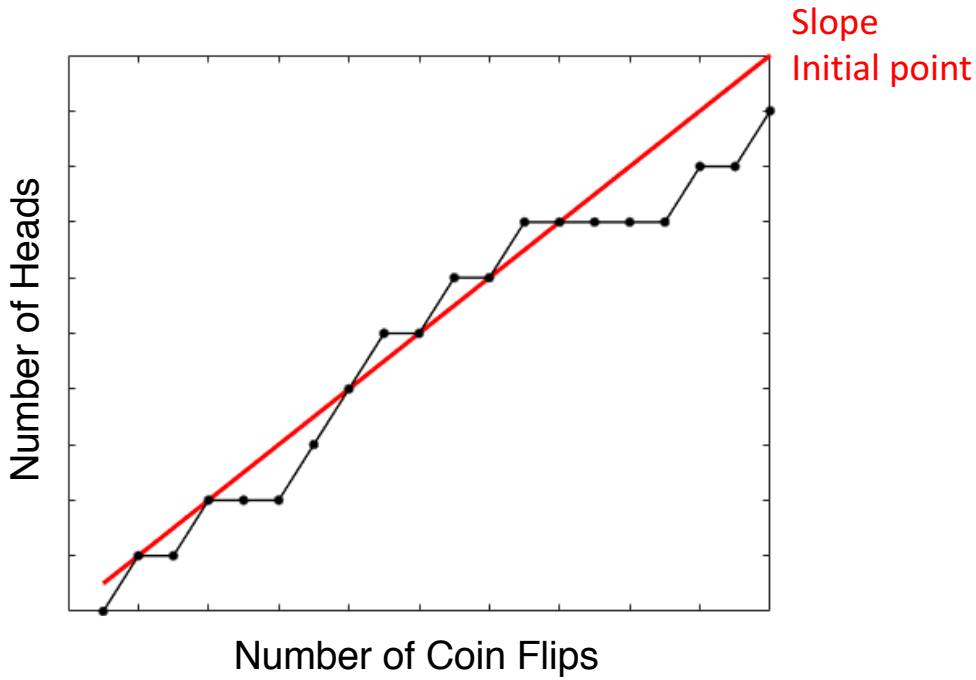

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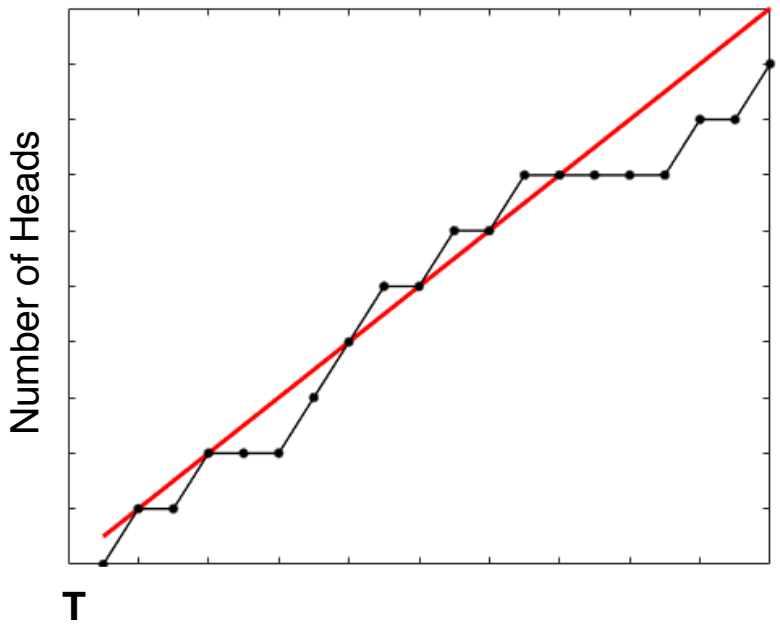

Random process:

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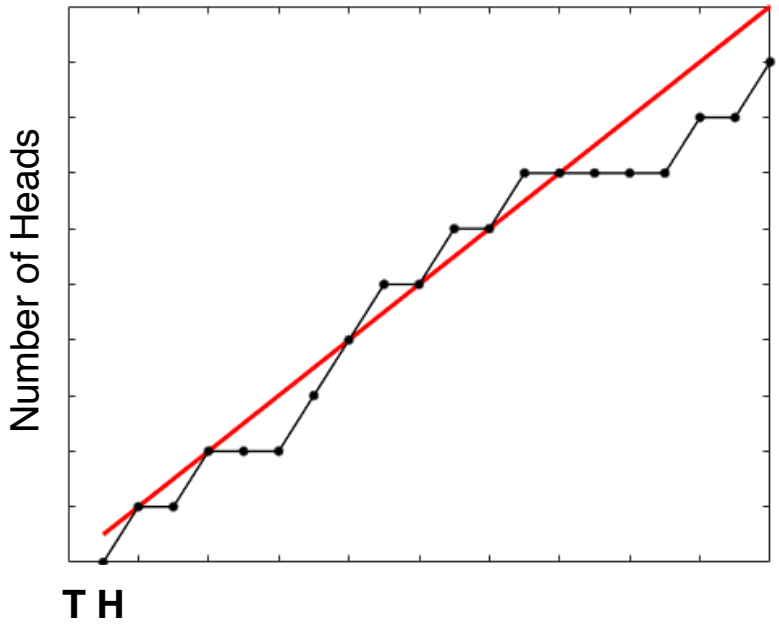

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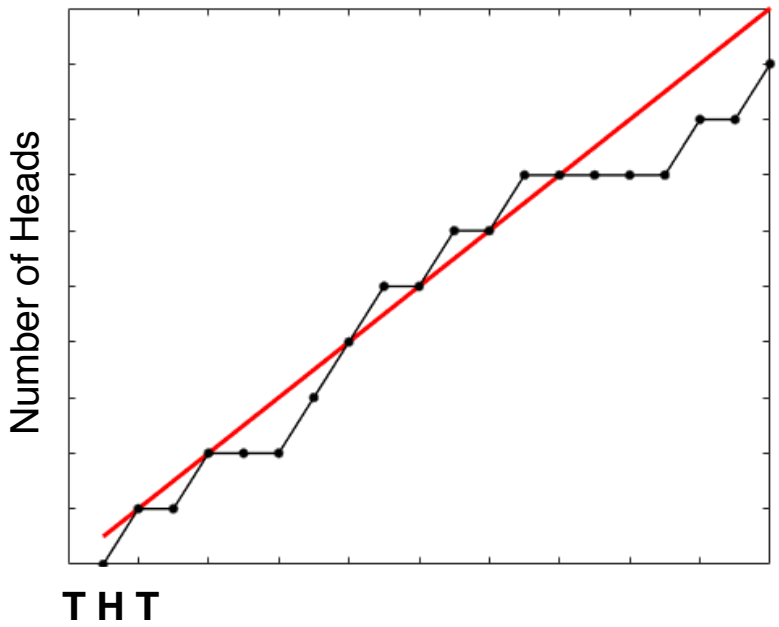

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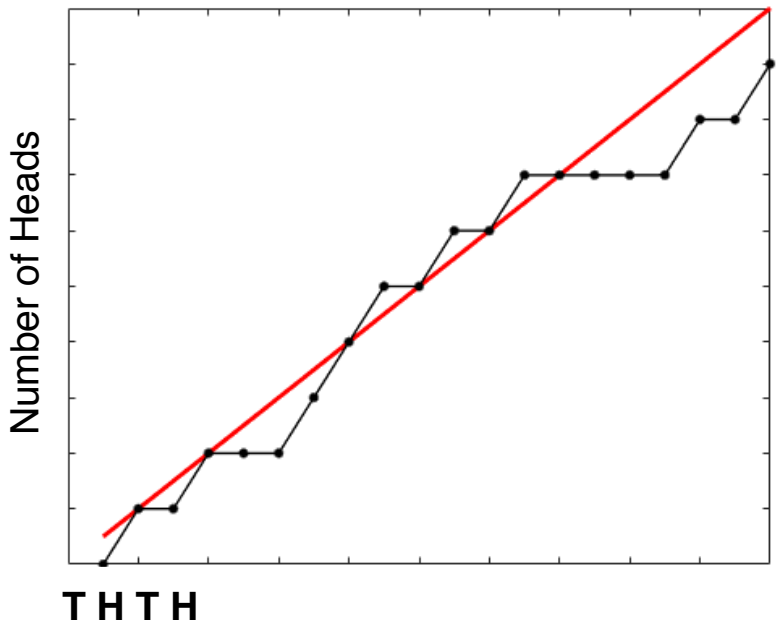

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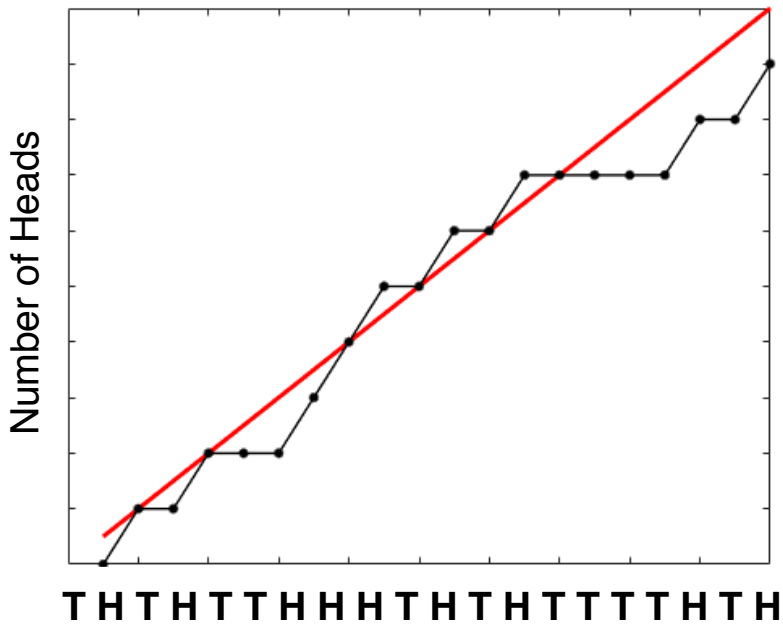
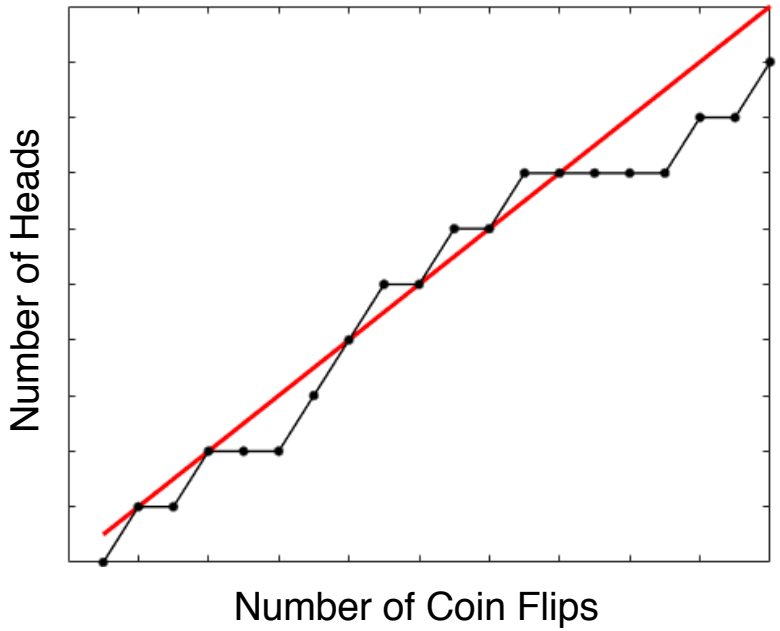
Multiple outcomes possible and they occur randomly (modeled by a probability distribution)



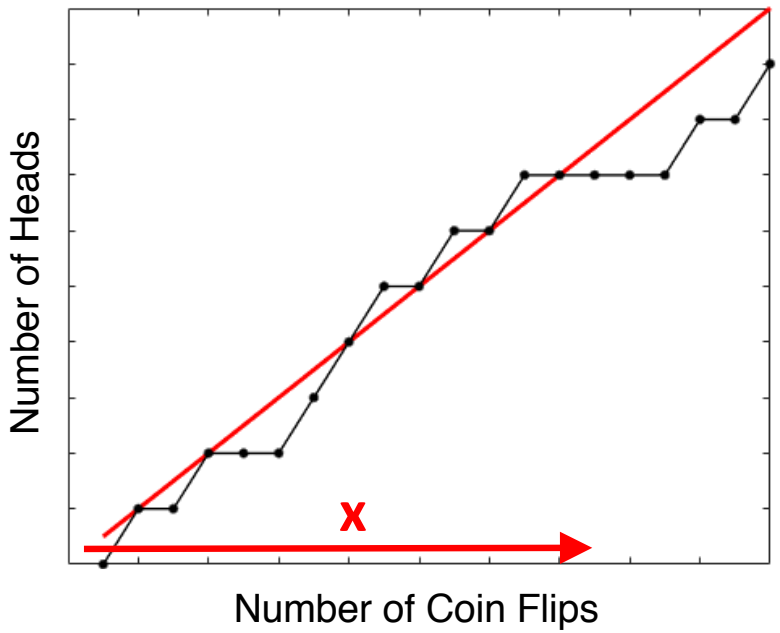
Random process and

Deterministic process



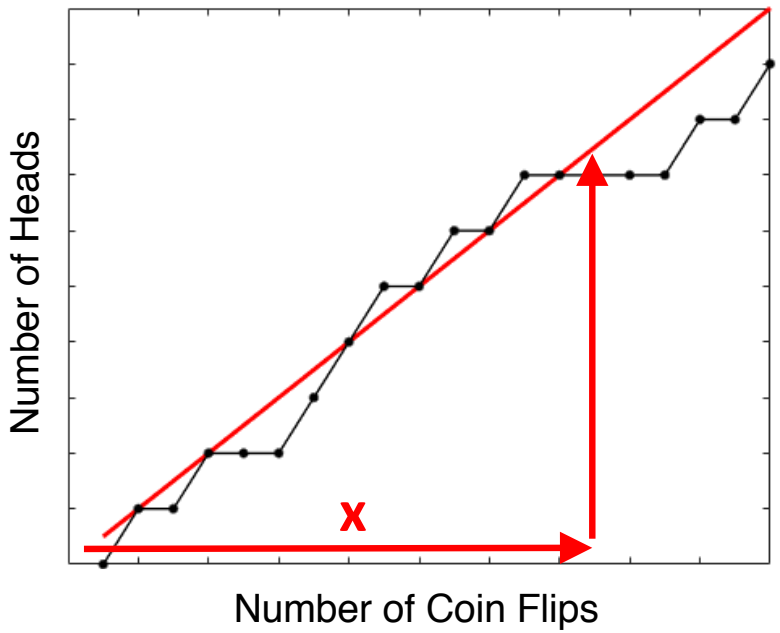
Random process and

Deterministic process



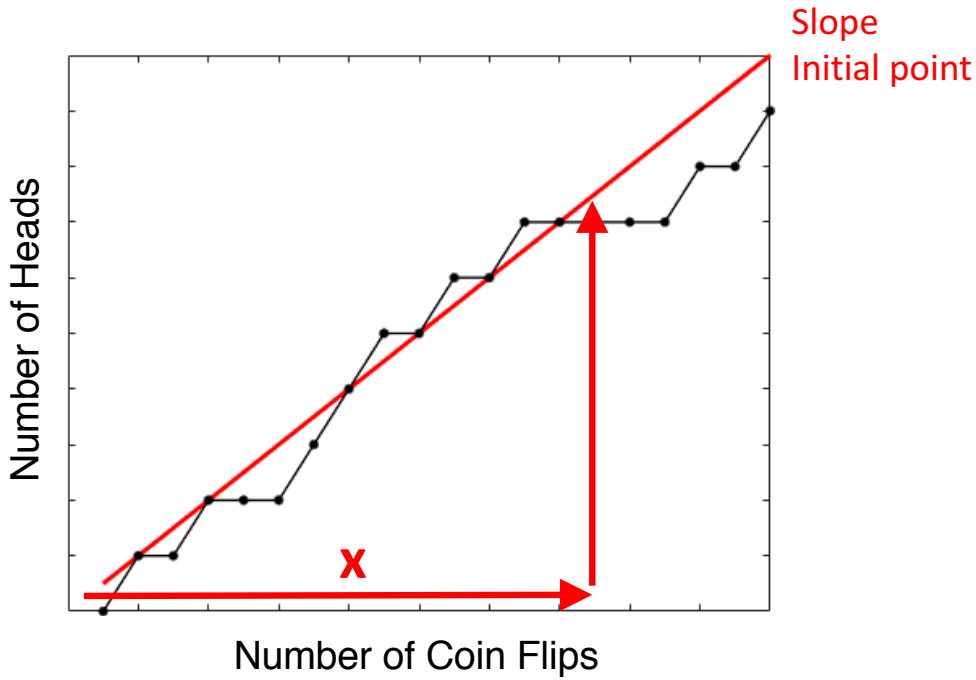
Random process and

Deterministic process



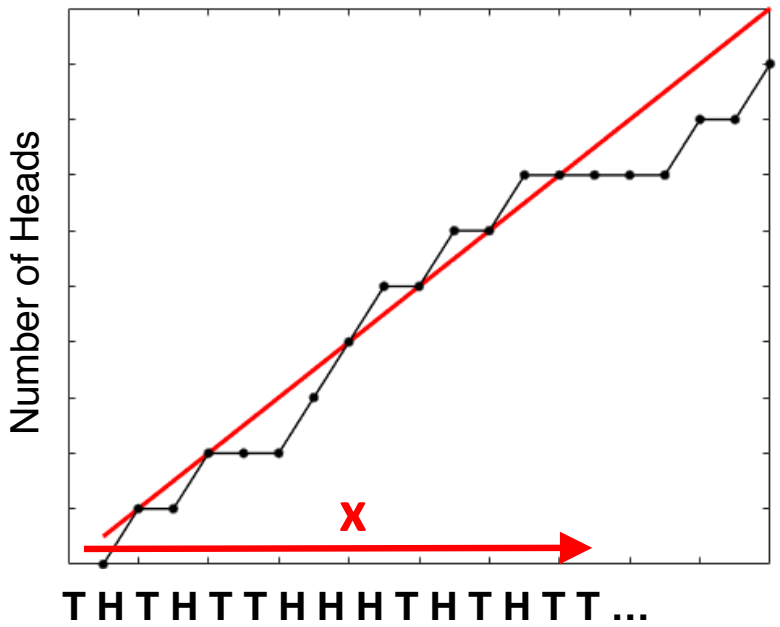
Random process and

Deterministic process



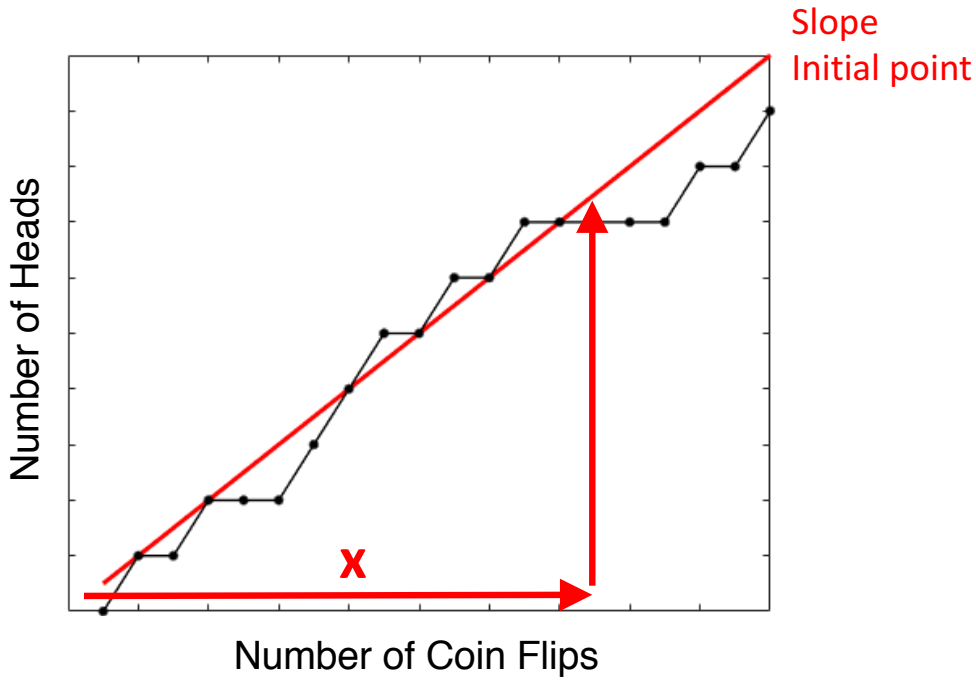
Random process and

Deterministic process



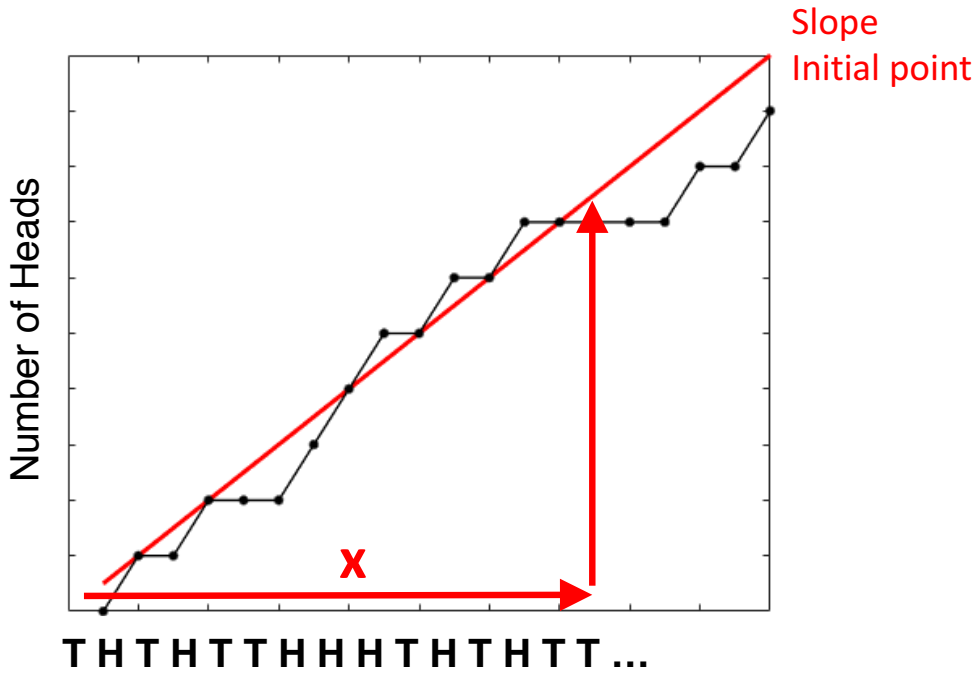
Random process and

Deterministic process



Random process and

Deterministic process



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