Lesson5:
Generative Models for Text on the Web
Unit2:
Sample values from a probability distribution

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Introduction to Web Science Part 2

Emerging Web Properties

WeST
People and Knowledge Networks

Completing this unit you should

- Understand how to sample values from an arbitrary probability distribution
- Have seen yet another application of the cumulative distribution function
- Understand that sampling from a distribution is just a coordinate transformation of the uniform distribution

How to generate words with this Model

- Switch to cumulative probabilities (Simulated) probabilistic model 

	‘ ‘	‘a‘	‘c‘	‘b‘	‘e‘	...	‘z‘
$P(x)$	0.138	0.173	0.002	0.009	0.299	...	0.034
$S(x)$	0.138					...	

How to generate words with this Model

- Switch to cumulative probabilities (Simulated) probabilistic model 

	‘ ‘	‘a‘	‘c‘	‘b‘	‘e‘	...	‘z‘
$P(x)$	0.138	0.173	0.002	0.009	0.299	...	0.034
$S(x)$	0.138	0.311				...	

How to generate words with this Model

- Switch to cumulative probabilities (Simulated) probabilistic model 

	‘ ‘	‘a‘	‘c‘	‘b‘	‘e‘	...	‘z‘
$P(x)$	0.138	0.173	0.002	0.009	0.299	...	0.034
$S(x)$	0.138	0.311	0.313			...	

How to generate words with this Model

- Switch to cumulative probabilities (Simulated) probabilistic model 

	‘ ‘	‘a‘	‘c‘	‘b‘	‘e‘	...	‘z‘
$P(x)$	0.138	0.173	0.002	0.009	0.299	...	0.034
$S(x)$	0.138	0.311	0.313	0.322		...	

How to generate words with this Model

- Switch to cumulative probabilities (Simulated) probabilistic model 

	‘ ‘	‘a‘	‘c‘	‘b‘	‘e‘	...	‘z‘
$P(x)$	0.138	0.173	0.002	0.009	0.299	...	0.034
$S(x)$	0.138	0.311	0.313	0.322	0.621	...	

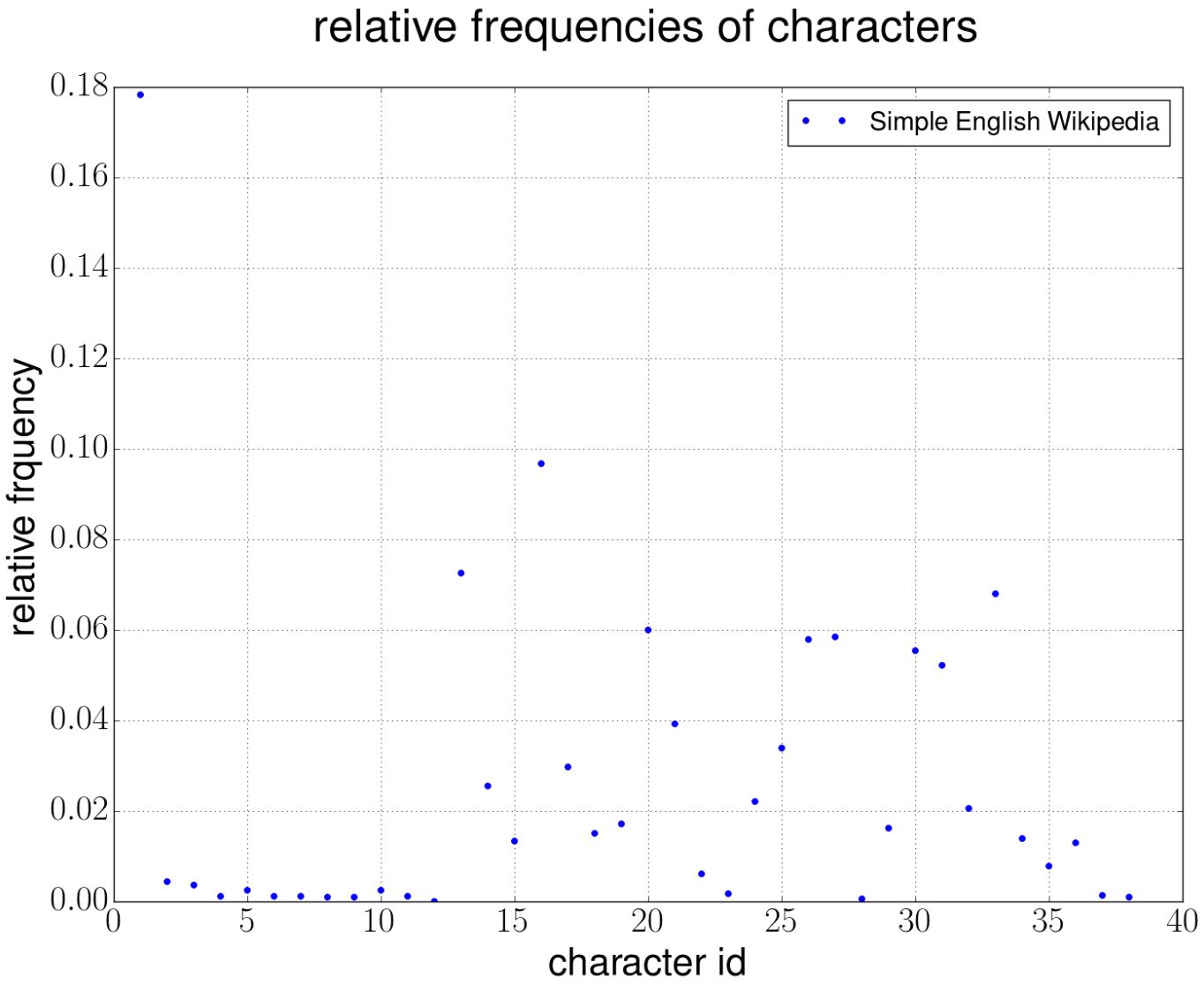
How to generate words with this Model

- Switch to cumulative probabilities (Simulated) probabilistic model 

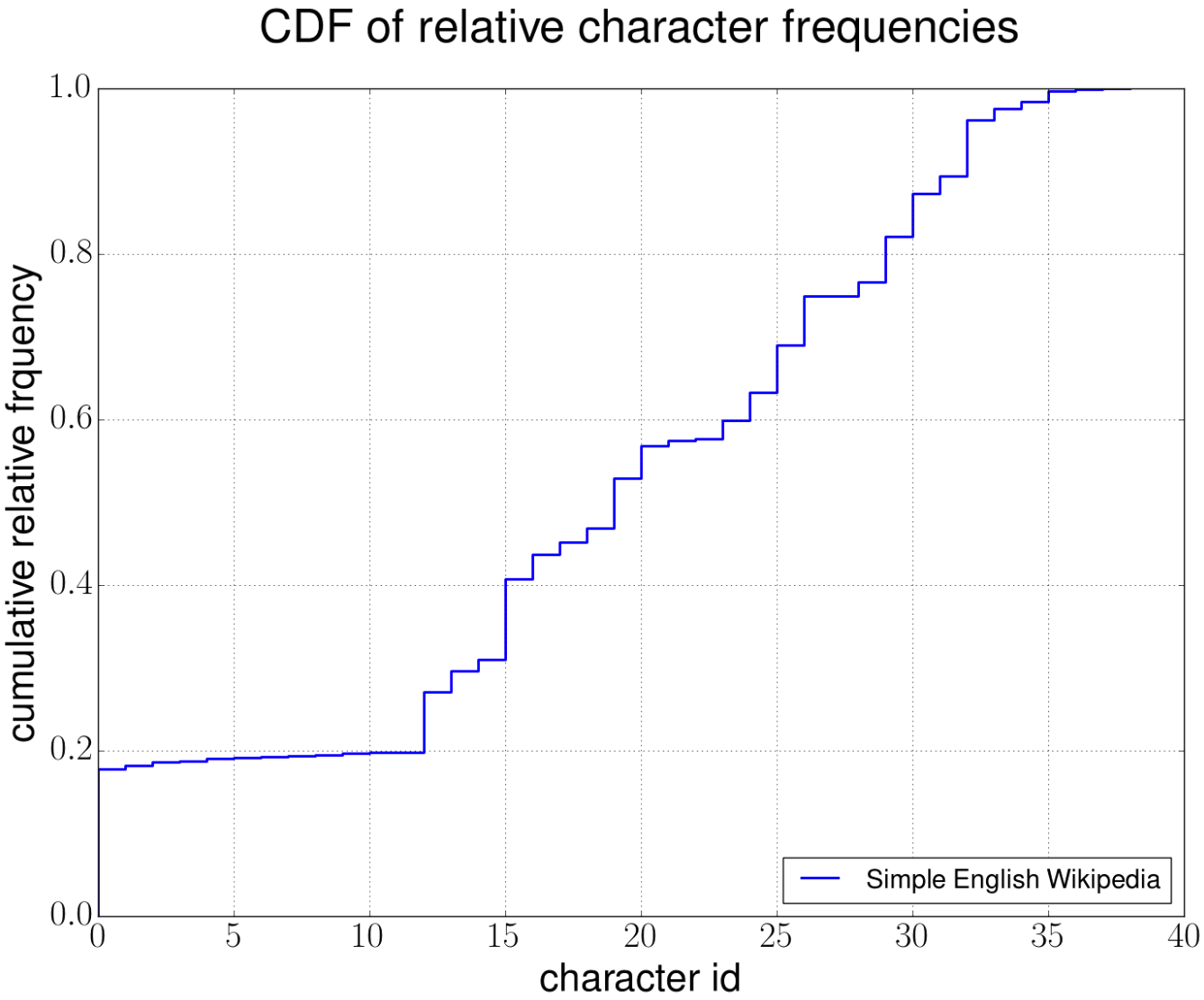
	‘ ‘	‘a‘	‘c‘	‘b‘	‘e‘	...	‘z‘
$P(x)$	0.138	0.173	0.002	0.009	0.299	...	0.034
$S(x)$	0.138	0.311	0.313	0.322	0.621	...	1

- Now draw a uniform random number between 0 and 1 e.g.: r = random.random()
- Find x so that S(x) is the lowest value bigger than r

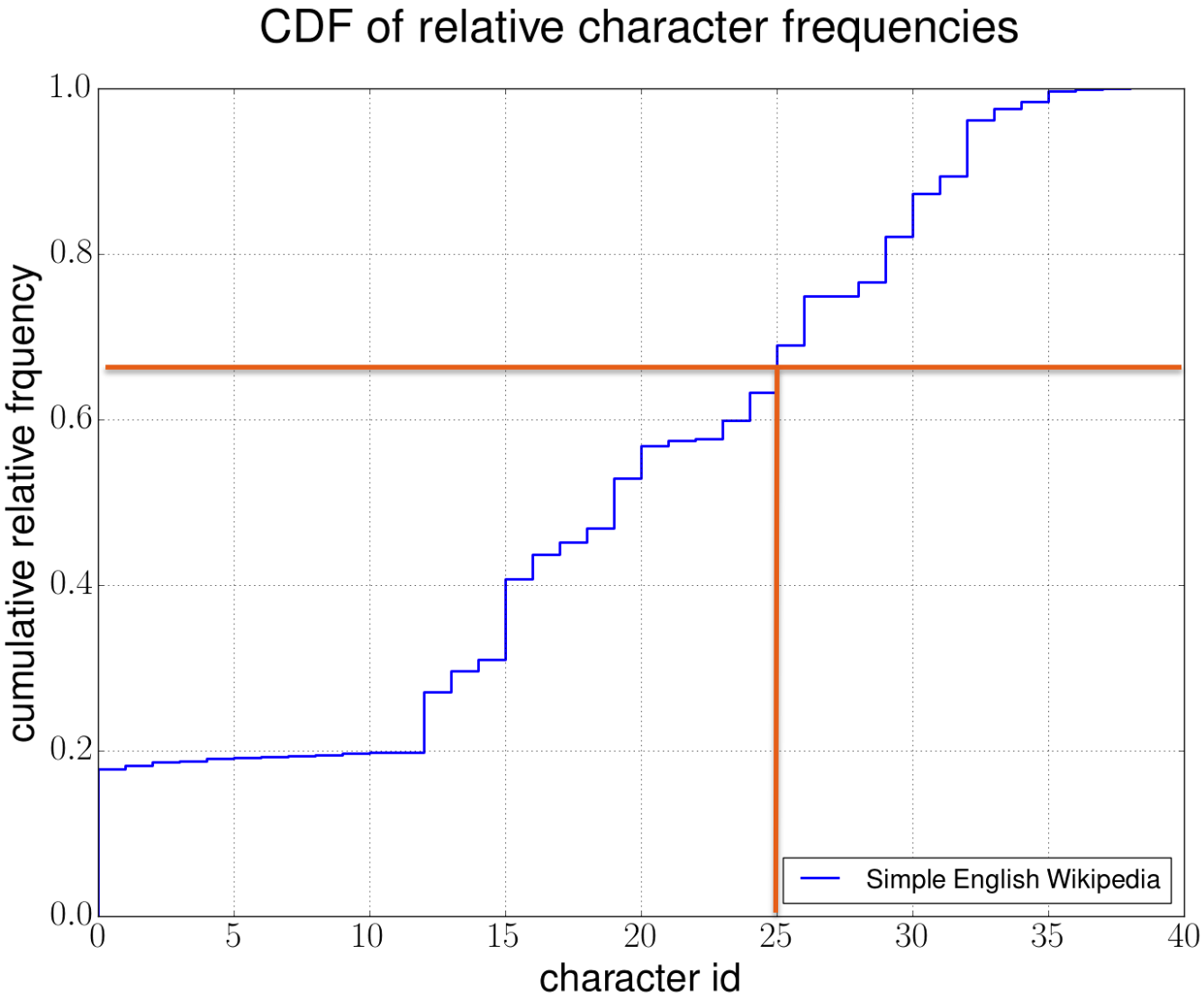
Shape of the character distribution [a-z0-9]



Rolling a die on the CDF means…



Rolling a die on the CDF means… char 25



Thank you for your attention!

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