

CSE 312

Foundations of Computing II

Lecture 30: Victory Lap + Review



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Slide Credit: Based on Stefano Tessaro's slides for 312 19au incorporating ideas from Alex Tsun's and Anna Karlin's slides for 312 20su and 20au









Foundations of Computing II

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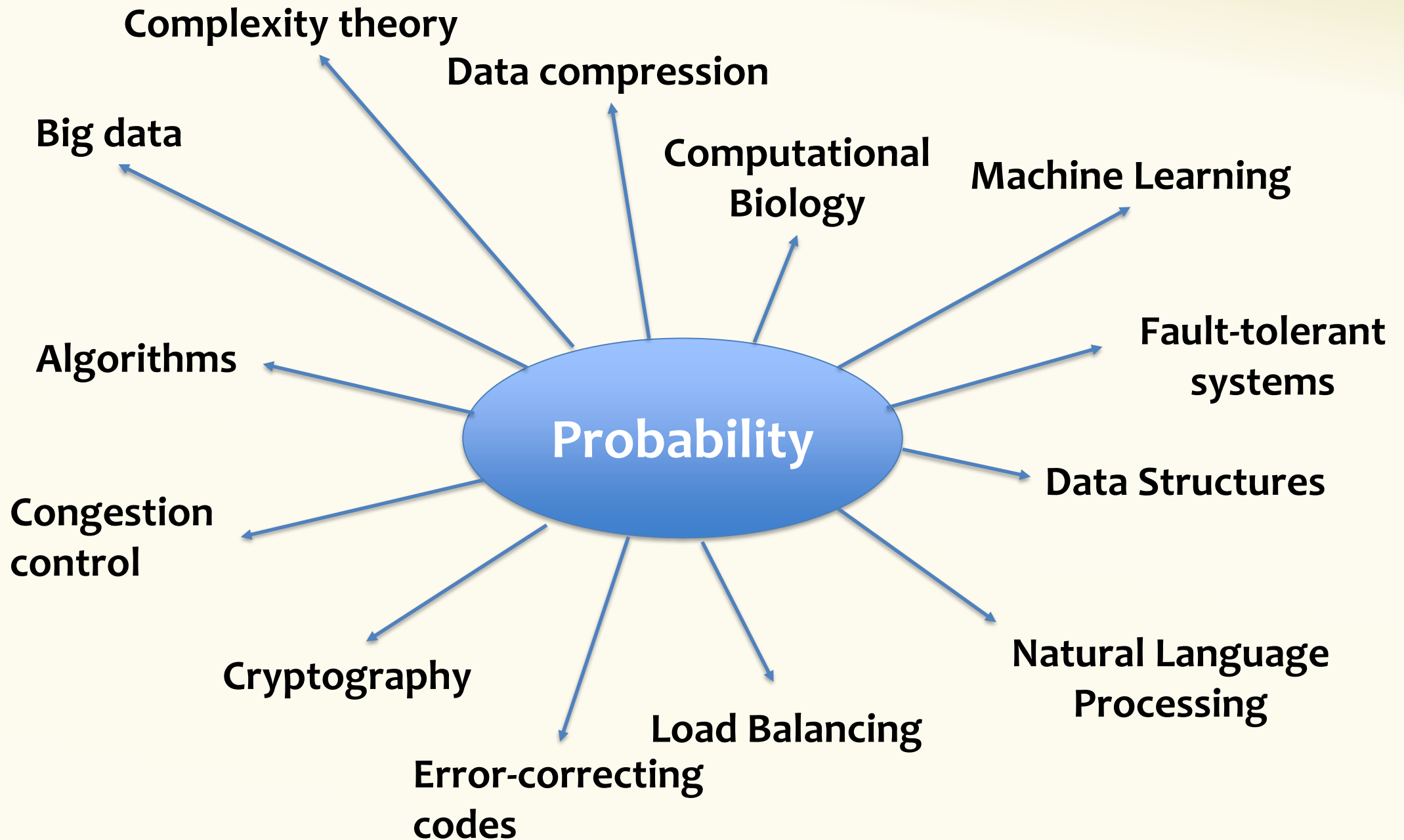
Introduction to Probability & Statistics for computer scientists



What is probability??

Why probability?!

+ much more!



Content



- **Counting (basis of discrete probability)**
 - Counting, Permutation, Combination, inclusion-exclusion, Pigeonhole Principle
- **What is probability**
 - Probability space, events, basic properties of probabilities, conditional probability, independence, expectation, variance, joint probabilities
- **Properties of probability**
 - Various inequalities, Zoo of discrete random variables, Concentration, Tail bounds
- **Continuous Probability**
 - Probability Density Functions, Cumulative Density Functions, Uniform, Exponential, Normal distributions, Central Limit Theorem, Estimation
- **Applications**
 - A sample of randomized algorithms, differential privacy, fairness, learning ...

Reminders

- **Final Exam**

- Please make sure you are familiar with the policies and resources posted on EdStem!

- **Course Evaluation**

- Please take a few minutes to fill out course evaluations. We have been making gradual changes to the course and we want to know what you think (positive and constructive).
- We learn a lot more from having a large sample size to make sure the opinions in the evaluations are reflective of the whole student body!

What's Next?

- Lots of theory courses that build up on notions of probability
 - CSE 421: Algorithms (no probability)
 - CSE 422: Modern Algorithms
 - CSE 427: Computational Biology
 - CSE 446: Machine Learning
 - CSE 447: Natural Language Processing
 - Many more grad courses in CSE
- Data Science Option in CSE
 - Other data science courses at UW (e.g., SOC 225)
 - Courses in STAT or MATH focused on probability

Thank You!

For your resilience, your willingness to ask questions, participating in our community, and your patience.

Thank the fantastic TAS!

JOSEPH AZIZEH

ASHWIN KISHIN BANWARI

Harrison Bay

EGE CAGLAR

RAHUL CHANDRA

XINYUE CHEN

Anna Dmitrievna Goncharenko

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SHREYA JAYARAMAN

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Logan Milandin

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