

# CS 561, Lecture 0

Jared Saia

University of New Mexico

# Today's Outline

- About Class
- Prereq Material

## About Me

- Grew up in rural Georgia; Lived in Palo Alto, Kyoto, and Seattle
- Work in theoretical computer science: provable security for distributed algorithms
- Have two graduate students, Abhinav and Diksha, both recruited from this class
- Hearing: I am completely deaf in high frequency ranges
  - If I mishear you, please **rephrase** your question/comment
  - I can't hear whispering. For questions during exams, please write them down or ask me outside.
  - I will not hear any high pitched alarm

# About Class

- Topics covered: Randomized Algorithms and Data Structures; Induction and Recurrences; Dynamic Programming and Greedy Algorithms; Graph Algorithms; NP-Hardness and Approximation Algorithms; Linear Programming and Gradient Descent
- This class heavily uses proofs. If you are not familiar with them (e.g. direct proof, proof by induction, contradiction, etc.), you should take CS361/CS362
- You are **wasting your time here** if you haven't had the prereq material. As useless as sitting in Japanese III class if you haven't taken Japanese I and II.

# About Class

- Topics covered: Randomized Algorithms and Data Structures; Induction and Recurrences; Dynamic Programming and Greedy Algorithms; Graph Algorithms; NP-Hardness and Approximation Algorithms; Linear Programming and Gradient Descent
- This class heavily uses proofs. If you are not familiar with proofs (e.g. direct proof, proof by induction, contradiction, etc.), asymptotic notation, and recursion, you should take CS361/CS362.
- You are **wasting your time here** if you haven't had the prereq material. As useless as sitting in Japanese III class if you haven't taken Japanese I and II.

# About Class

- Class uses a mathematical methodology (theorems and proofs)
- Will be challenging, especially if you haven't used it much.
- We'll mostly be covering material that has only been discovered in the last few decades - and near the end of the class, in the last decade. I'm an expert in this area, and even I get stuck and make mistakes.
- Best way to study is to **solve problems, and re-derive proofs**
- This mathematical methodology is an **extremely** important tool in computer science

# Administrivia

- Web page
- Syllabus
- Piazza (todo: sign up ASAP)
- Please: no laptops in class; All tests will be closed book and closed notes except for 2 pieces of notebook paper.
- There will be a 30 minute pre-req quiz next Tuesday - covers prereq material including material in PreLecture 1 and 2, and Appendices of our textbook. Will count as a hw grade, and will determine your eligibility to take class.

# Todo

- Sign up for Piazza; review syllabus
- Todo: Review Prereq slides and Appendices carefully, solve problems, and prepare for quiz



# Today's Outline

- Prereq Material Lightning Review
- Randomized Algorithms and Data Structures