Natural Language Processing
Introduction

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00A
Roadmap

By the end of this class you should . . .

- Be able to give examples of where NLP is used
- Understand the workings of the course
- Know me and each other a little better
Computational Linguistics Applications
Machine Learning is Doing Great!

- Can drive a million miles without an accident
- Can beat any living chess player
Machine Learning is Doing Great!

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- Automated call center vs. five-year old?
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- Automated call center vs. five-year old?
- We’ll learn why we’re so far away
What’s Natural Language Processing

- Computational approaches to understand, generate, and process natural language
- Cross-discipline
  - Computer science: implement algorithms
  - Linguistics: develop theory / data
  - Statistics: learn patterns from data
  - Experts in specific languages: get a computer to handle a new language
  - Psychologists: how does our brain process language
  - Sociologists: how do social constraints change how we process language
Our focus: question answering

We’ll build a state-of-the-art question answering system

- Find related articles (information retrieval)
- Classifiers to identify relevant properties (machine learning)
- Read related source material (natural language understanding)
- Decide when to trust answers (sequence learning / calibration)
Our focus: question answering

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- Live competition with human players
What you need for this course

- Interactive classroom: come ready with questions and participate in exercises
- Helps to have a laptop to bring to class
- Math background
  - Will ask you to manipulate equations
  - Will expect you to be able to do basic derivatives
  - Work with functions like exponentiation and logs
  - Probability: review online (hugely important)
- Computer / programming skills
  - You will need to write python programs
  - You will need to interact with a Unix command line
  - You will need to interact with data files
Course reading

- We will provide reading assignments, mostly from the book. (Read them *before* associated class.)
- The reading will cover more than we cover in class.
- Free online
Before class …

- Install Python / nltk on your computer
- Come to class ready to work through some Python examples
- Also look at homework and see if you have any questions