

Computational Linguistics Introduction

NLP: Jordan Boyd-Graber

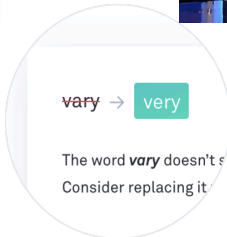
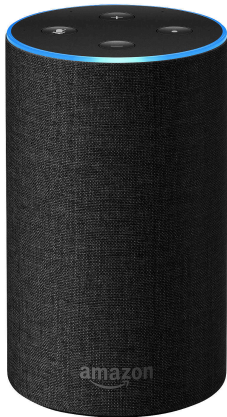
University of Maryland

August 6, 2024

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



Google Übersetzer

Sofortübersetzung deaktivieren



Englisch Französisch Deutsch Sprache erkennen ▼



Deutsch Englisch Chinesisch (vereinfacht) ▼

Übersetzen

Da liegt der Hase im Pfeffer



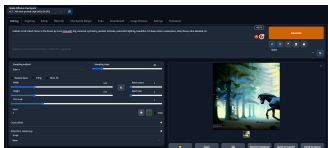
胡椒里有兔子

Computational Linguistics Applications

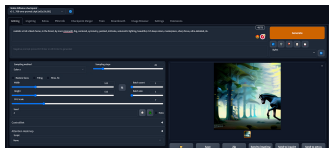
Linguistic AI is Everywhere



- ai (and the underlying nlp technology) is everywhere
- Important subject of research
- Important tool for research



Linguistic AI is Everywhere



- ai (and the underlying nlp technology) is everywhere
- Important subject of research
- Important tool for research
- How it works
- How it falters
- History

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

What computational linguistics can do!

Automatic solutions to . . .

- Explain why the “ly” in “**ally**” and “**quickly**” are different (morphology)
- Tell the difference in category between “**water** the flowers” and “drink the **water**” (part of speech tagging)
- Why “saw the sun with the telescope” is different from “saw the astronomer with the telescope”
- Translate “My hovercraft is full of eels” into Hungarian (machine translation)

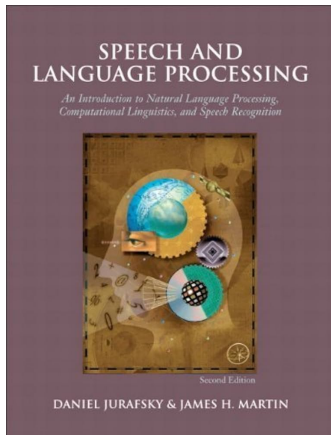
What you need for this course

- Interactive classroom: come ready with questions and participate in exercises
- Helps to have a laptop to bring to class
- Linguistic background
- Math background
- Computer / programming skills

Administrivia

- Sign up on Piazza (use a photo)
 - ▶ Another way to earn participation
 - ▶ caete: only way to earn participation
- Keep track of course webpage `http://umiacs.umd.edu/~jbg/teaching/CMSC_723/`
- Homeworks
- 7 late days
- Let us know about special needs

Course reading



(Picture is of 2nd edition,
read **3rd** edition.)

- 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

Communicating with Piazza

We will use Piazza to manage all communication

`https://piazza.com/umd/fall2024/cmsc723inst735`

- Questions answered within 1 day (hopefully sooner)
- Hosts discussions among yourselves
- Use for any kind of technical question
- Use for **most** administrative questions
- Can use to send us private questions too

How to ask for help

- Explain what you're trying to do
- Give a minimal example
 - ▶ Someone else should be able to replicate the problem easily
 - ▶ Shouldn't require any data / information that only you have
- Explain what you **think** should happen
- Explain what you get instead (copy / paste or screenshot if you can)
- Explain what else you've tried

TAs

- FNU Sakshi
- Kyle Seelman
- Ashish Seth

All TAs required to have surnames that start with “S”.

Me

- Associate professor
 - ▶ Office: Iribe 4146
- Was formerly a professor at University of Colorado
- Research: topic models, question answering, machine translation
- Fifth time teaching the class (or something similar)
- Born in Colorado (where all my family live)
- Grew up in Iowa (hometown: Keokuk, Iowa)
- Went to high school in Arkansas
- Undergrad in California
- Grad school in New Jersey
- Brief jobs in between:
 - ▶ Working on electronic dictionary in Berlin
 - ▶ Worked on Google Books in New York
 - ▶ Sabbatical at Google Zürich
- ying / jbg / jordan / boyd-graber