

# Course Introduction

## CS4742 Natural Language Processing

### Lecture 00

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# 1 Introduction to NLP

## 2 Course Introduction

# About This Course

- Syllabus on D2L

# What is Natural Language Processing?

- Natural Language Processing (NLP) is an interdisciplinary field that studies how to process, analyze, or generate natural language text
  - ▶ **Subject:** natural language
  - ▶ **Research Tools:** computer science
  - ▶ **Modeling Tools:** mathematics, statistics, linguistics
- Related areas:
  - ▶ Computational Linguistics (CL)
  - ▶ Language Technology
  - ▶ Natural Language Understanding (NLU)
  - ▶ Human Language Technology (HLT)

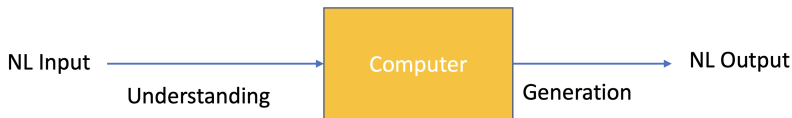
# Why Study NLP?

- Centrality of Natural Language

- ▶ A primary (and natural) mode of human communication
- ▶ Representation for most recorded human knowledge
- ▶ A very rich and flexible representation (when compared to most formal representations)

- Language barriers

- ▶ Human-human: Machine Translation
- ▶ Human-computer: NL human machine interfaces, e.g., question answering and chatbots



# What does NLP system need?

## Knowledge Requirements for NLP

- **Phonetics and Phonology**: Sounds of language, for speech recognition per se.
- **Morphology**: Structure of words, for spelling correction, etc.
- **Syntax**: Structure of sentences for parsing.
- **Semantics**: Meaning of words and sentences.
- **Pragmatics**: Meaning of utterances in context.
- **Discourse**: Meaning of larger units of text, larger than a single utterance.

# Why is NLP hard?

- **Ambiguity:**

- ▶ **Lexical ambiguity:** A word can have multiple meanings (e.g., bank)
- ▶ **Syntactic ambiguity:** A sentence can be parsed in multiple ways
- ▶ “I made her duck”

# NLP Applications

- Search engines
- Language translation
- Text summarization
- Classifying text (e.g., Sentiment analysis)
- Question Answering
- Spoken Dialog Systems (e.g., Chatbots)
- Social media analysis
- Information extraction, etc.



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# Course Schedule

- *Course Schedule on Syllabus*

# Course Readings

- *Refer to the Syllabus*

# Assessment Plan

- *Refer to the Syllabus*

# Group Project

This course will be a **project-based** course. No exams, yay!!

- The final report and presentation will be on the final exam date.

# How to Succeed in this Course

