

# Introduction

(SNLP tutorial)

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April 30, 2021

# Overview

- Perplexity
- Maximum Likelihood Estimation
- Smoothing

# Perplexity

## Formulas

$$2^{\frac{1}{n} \sum_1^n \log p(w_i | w_{i-1})}$$
$$2^{-\sum_{w,h} f(w,h) \log_2 P(w|h)}$$

TODO

# Maximum Likelihood Estimation

## TODO

- A way to estimate language model (distribution) parameters
- Trying to maximize probability of the training data

# LM Smoothing

TODO

- Q: What happens if an unknown token is encountered and LM assigns it 0 probability?

# Homework

- Perplexity calculation by hand
- Plotting n-grams
- MLE language model and smoothing
- Custom alternative to perplexity

# Resources

1 TODO