

First presentation of my undergraduate project

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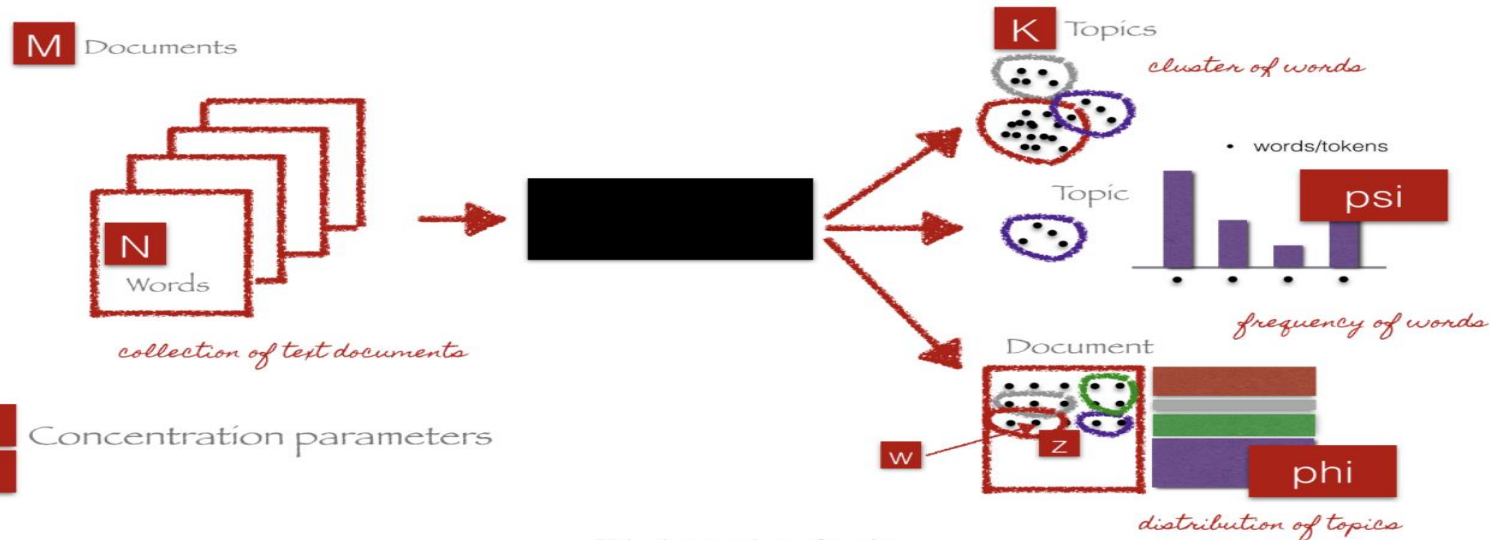
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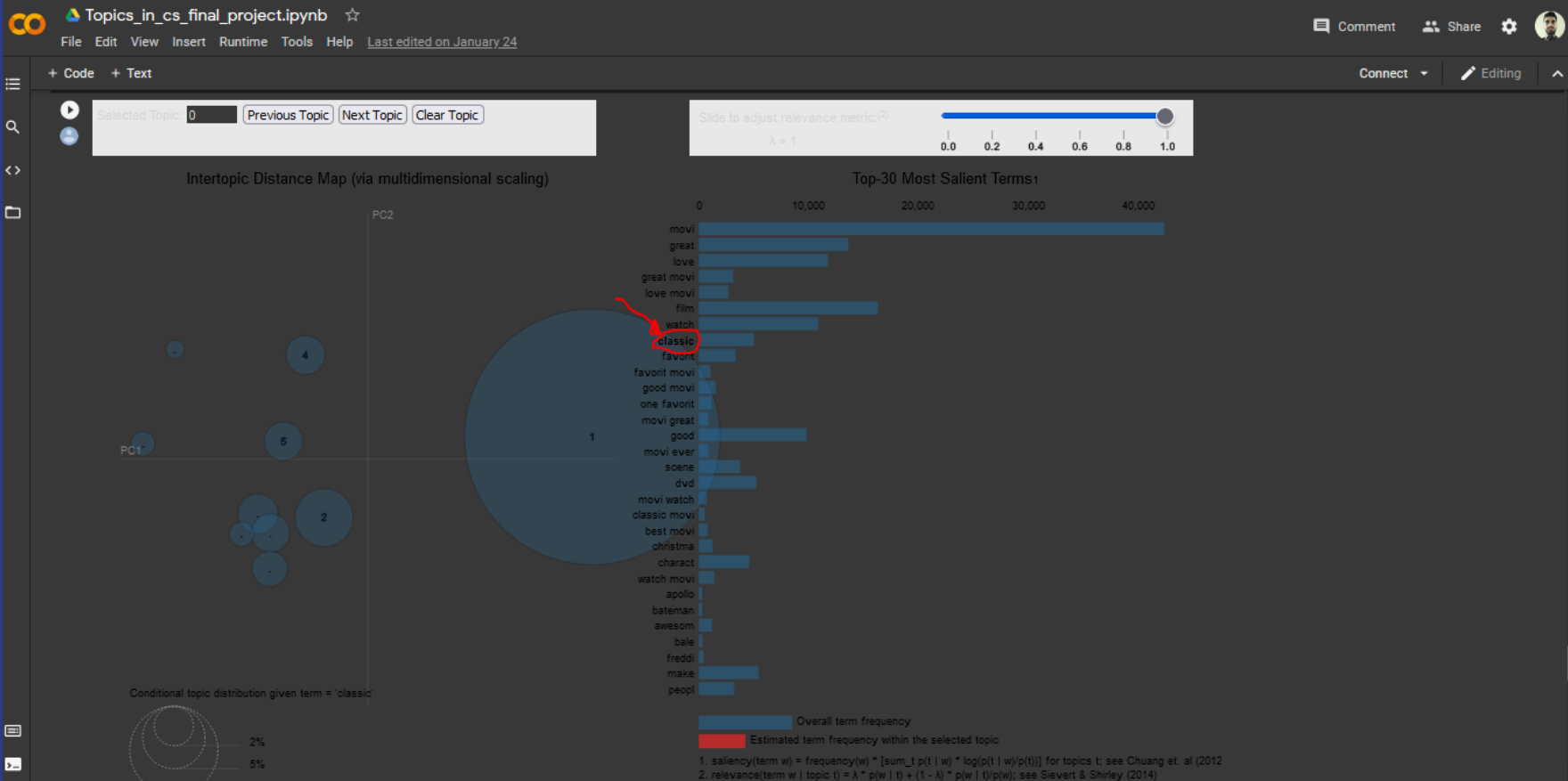
outline

- Previous work (with a friend of mine)
 - Recommended project topics
 - Gist of my last two weeks' research
 - Q&A and your suggestions
- 
- ❖ Current research trends in NLP
 - ❖ What Would be my niche?
 - ❖ What I need to know!

Previous work (with a friend of mine)



- K is the number of topics
- N is the number of words in the document
- M is the number of documents to analyse
- α is the Dirichlet-prior concentration parameter of the per-document topic distribution
- β is the same parameter of the per-topic word distribution
- $\phi(k)$ is the word distribution for topic k
- $\theta(i)$ is the topic distribution for document i
- $z(i,j)$ is the topic assignment for $w(i,j)$
- $w(i,j)$ is the j -th word in the i -th document
- ϕ and θ are Dirichlet distributions, z and w are multinomials.





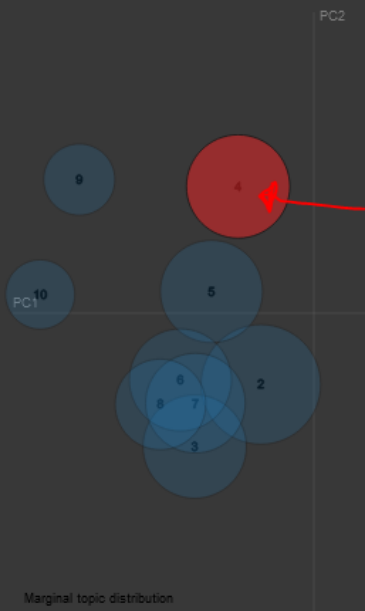
+ Code + Text

Connect ▾

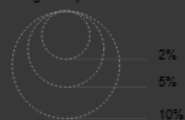
Editing



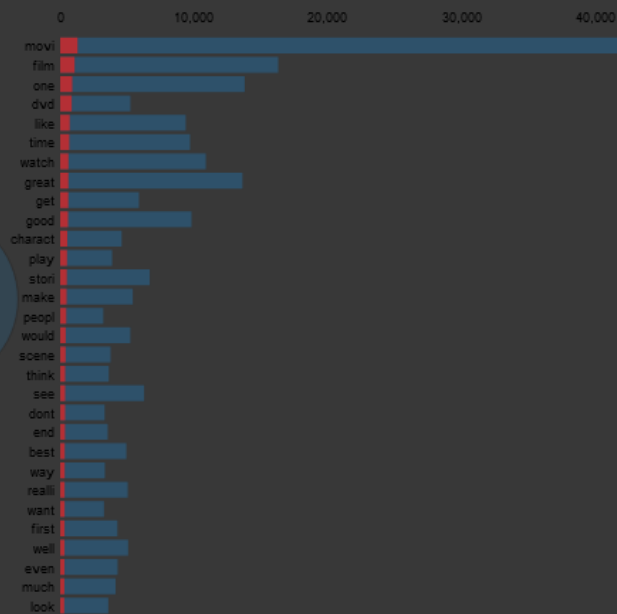
Intertopic Distance Map (via multidimensional scaling)



Marginal topic distribution



Top-30 Most Relevant Terms for Topic 4 (9.3% of tokens)



Overall term frequency

Estimated term frequency within the selected topic

1. saliency(term w) = frequency(w) * $[\sum_t p(t | w) * \log(p(t | w)/p(t))]$ for topics t ; see Chuang et. al (2012)
2. relevance(term w | topic t) = $\lambda * p(w | t) + (1 - \lambda) * p(w | t)/p(w)$; see Sievert & Shirley (2014)

Recommended project topics

In Computer Vision we work on:

Face detection and recognition

Emotion detection

Action Detection

Lip Reading

Liveness Detection

In Natural Language Processing:

ChatBot

Aspect Detection

Conversational Recommender System

Question Answering

Topic Modeling

Trending Hashtag /Topic detection in social platforms

...

**Although I had a decent background in
Aspect detection and Topic Modeling,**

**I went for Chabot because of its more
adventure 😊**

Gist of my last two weeks' research

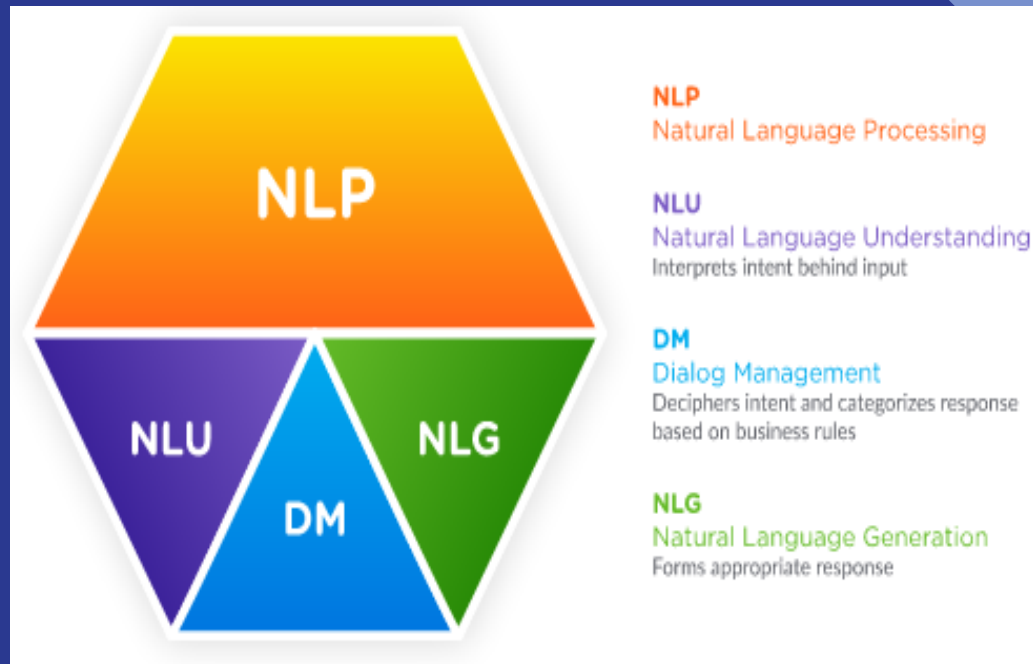
- ❖ Current research trends in NLP are (but not limited to) :

Spatial Language Understanding

Online discourse

Knowledge graph

Common sense reasoning



<https://www.interactions.com/natural-language-processing/>

Common sense reasoning:



Giant panda

Gibbon

Object

Szegedy et al, 2014



Jabri et al, 2017



A horse standing in the grass.

MacLeod et al, 2017



Li et al, 2016



I don't know. I
don't know. I

Open-ended

Holtzman et al, 2018

.... Nikola Tesla moved to
Prague in 1880. ... Tadakatsu
moved to Chicago in 1881.

Where did Tesla move in 1880?

Chicago

Jia et al, 2017

<https://www.youtube.com/watch?v=InIffoMnV7k&t=906s> Please head over this YouTube vid

Gist of my last two weeks' research

1.00

Kahneman's "three cognitive systems"

— "Maps of Bounded Rationality: ..." (Kahneman 2005)

PERCEPTION

- object recognition
- image segmentation
- speech recognition

INTUITION
SYSTEM 1

- Intuitive inferences on
 - pre-conditions and post-conditions
 - what happens before and after?
 - motivations and intents
 - mental and emotional states

=> This is what humans do every minute of waking their moments

REASONING
SYSTEM 2

- solving puzzles
- writing programs
- proving logic theorems
- reviewing ML papers
- giving an invited talk
- writing an op-ed

=> Humans often spend hours (or days) not doing this sort of reasoning at all...

Common sense reasoning:

1.00

Path to commonsense?

Brute force larger networks with deeper layers?



You don't reach to the moon
by making the tallest building in the world taller



What would be my niche?

Robot Clothes shop salesperson



Implementing visual recognition would be a bonus part

What I need to know:

1)

**Deep dive into DL and NN
(deep learning and Neural Nets)**

2)

More articles about Common sense reasoning

3)

Other things that I don't know that I need to know

Q&A and your suggestions

Hit me with your questions

And I sincerely appreciate your suggestion for my project 😊