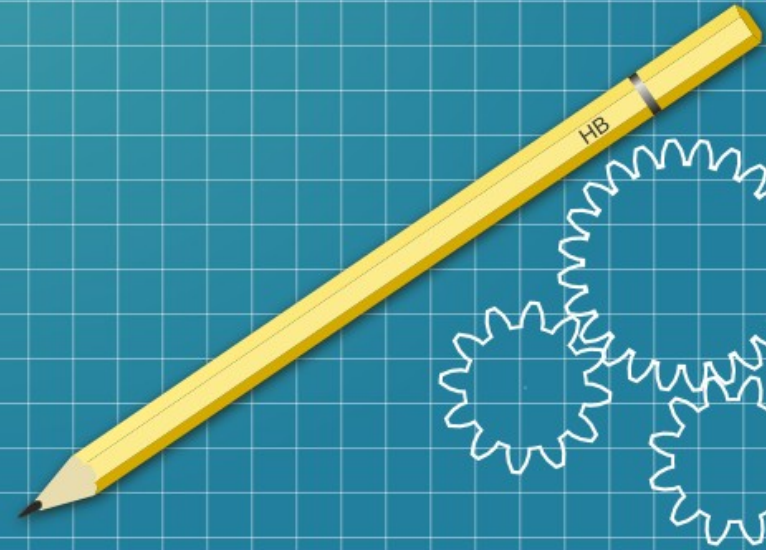


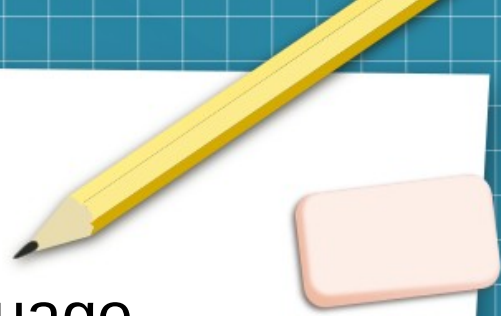
# Report

Sunny Unde



# Introduction


- Aim to translate English sentences into Indic language
- We experimented with Open GPT3 and Tensorflow.
- This report contains about our findings.




# Open GPT3

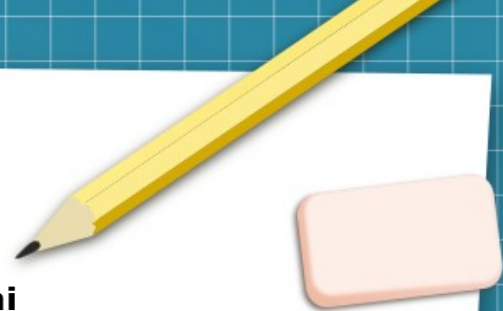


- GPT3(Generative Pre-trained Transformer 3) includes Deep Learning Process.
- It is a pre-trained model.
- It is largest language model yet with 175 billion parameters.

- 
- One can use GPT3 with both python and web-based interface provided by the Open AI
  - GPT3 is not just use for language translation it can be used for solving mathematics problem, writing SQL queries,etc

- 
- We tried three different languages Spanish, Hindi, Marathi to translate with the same training dataset sentences.
  - Spanish translation performed better than Hindi or Marathi output because it looks like GPT3 is not properly trained for Indic languages.

# Training Data



## English

I do not speak  
Spanish?

See you later!

Where is a good  
restaurant?

What rooms do you  
have available?

The food here is  
delicious

This is my hometown  
Will you please help  
me?

Do you know this  
address?

## Spanish

¿No hablo español?

¡Hasta luego!

¿Donde se encuentra un  
buen restaurante?

¿Qué habitaciones tienes  
disponibles?

la comida aqui es deliciosa

Esta es mi ciudad natal  
Por favor podría usted  
ayudarme?

¿Conoce esta dirección?

## Hindi

मैं स्पेनिश नहीं बोलता?

बाद में मिलते हैं!

एक अच्छा रेस्तरां कहां है?

आपके पास कौन से कमरे  
उपलब्ध हैं?

यहां का खाना स्वादिष्ट है

यह मेरा होमटाउन है  
क्या आप कृपया मेरी मदद  
करेंगे?

क्या आप इस पते को  
जानते हैं?

## Marathi

मी स्पेनिश बोलत नाही?

नंतर भेटू!

चांगले रेस्टॉरंट कुठे आहे?

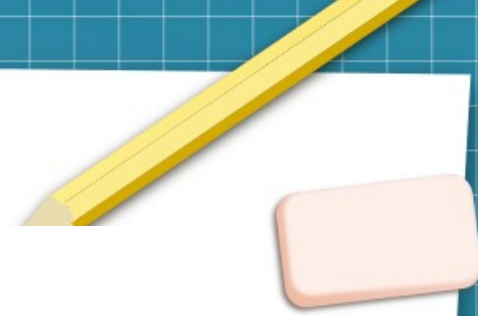
आपल्याकडे कोणत्या खोल्या  
उपलब्ध आहेत?

इथले जेवण स्वादिष्ट आहे

हे माझे मूळ गाव आहे  
कृपया तुम्ही मला मदत कराल  
का?

तुम्हाला हा पत्ता माहित आहे  
का?





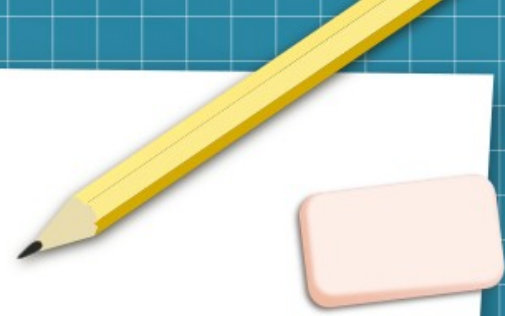
# PROMPT

This place is beautiful!

What is the name of this place?

Where are you going?

# Expected Output



## English(INPUT)

## Spanish

## Hindi

## Marathi

This place is beautiful!

¡Este lugar es hermoso!

यह जगह सुंदर है!

हे ठिकाण सुंदर आहे!

What is the name of  
this place?

¿Cuál es el nombre de  
este lugar?

इस जगह का नाम क्या है? या जागेचे नाव काय आहे?

Where are you going

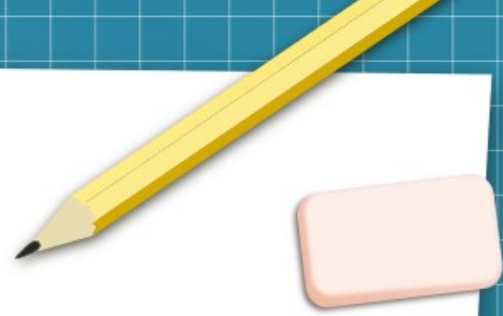
¿A dónde vas?

तुम कहाँ जा रहे हो

आपण कोठे जात आहात



# Output



## English(INPUT)

## Spanish

## Hindi

## Marathi

This place is beautiful!

¡Este lugar es hermoso!

यह स्थान बहुत ही  
प्यारी है!

या परिसरात सुंदर आहे!

What is the name of  
this place?

¿Cuál es el nombre de  
este lugar?

यह क्या नाम है?

या जगात कोणत्याही नाव  
आहे?

Where are you going

¿A donde vas?


आप कौन से जाना  
चाहते हैं?

तुमच्या जागी कुठे आहे?

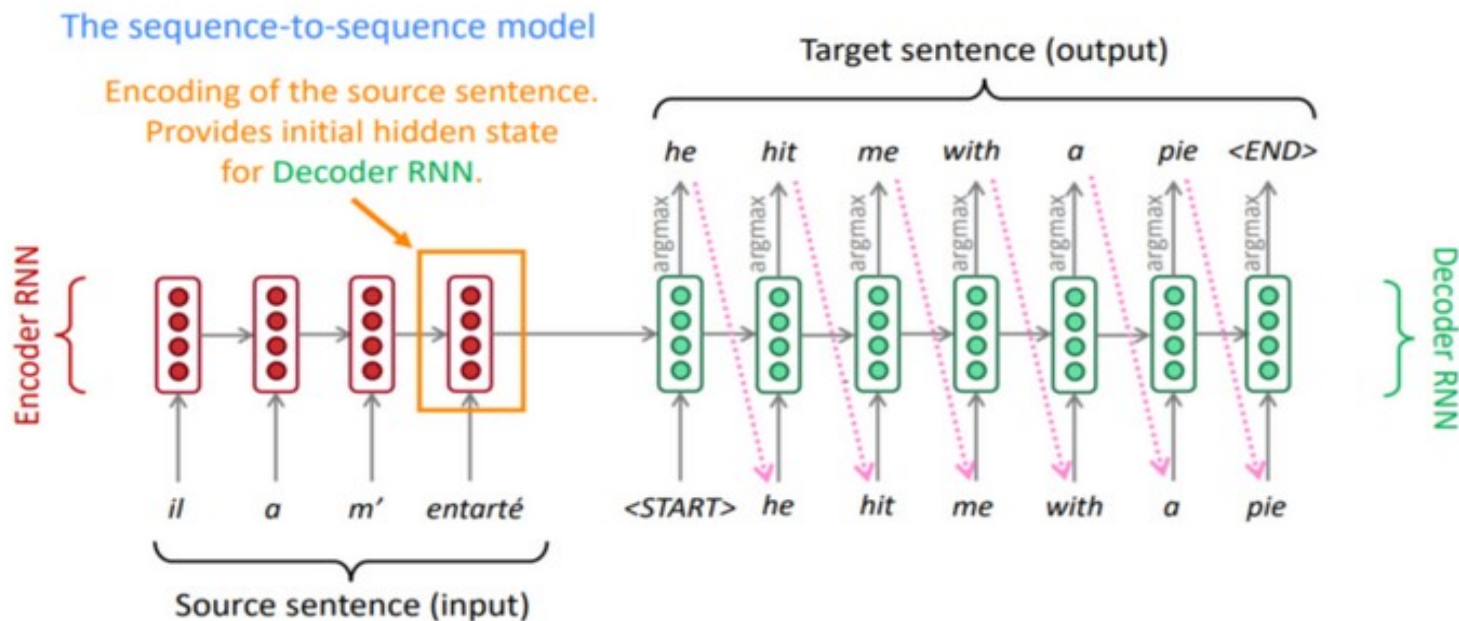
# Tensorflow



- TensorFlow is an end-to-end open source platform for machine learning.
- It can be used across a range of tasks but has a particular focus on training and inference of deep neural networks.

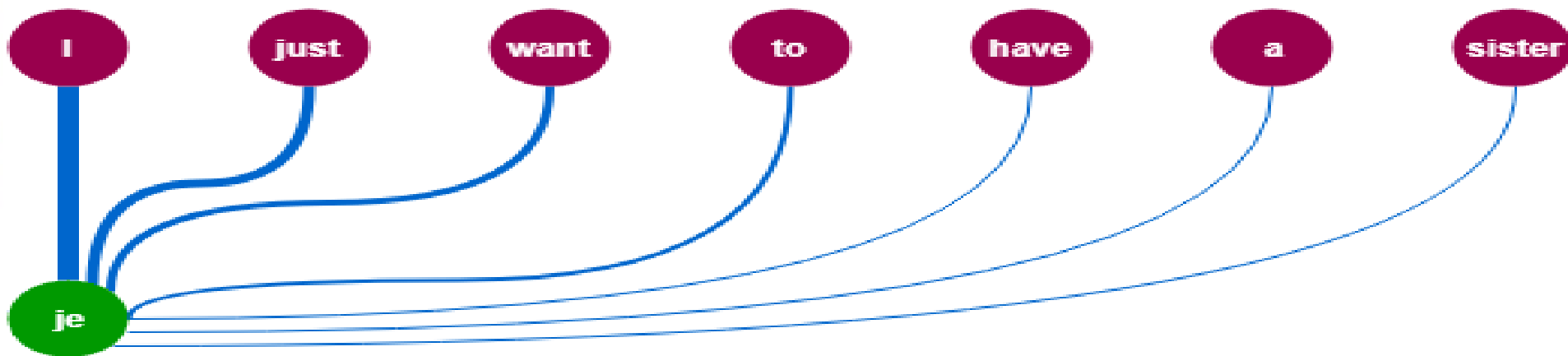
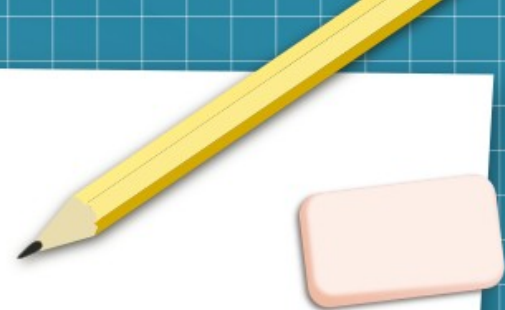
- 
- In tensorflow we particularly used the Bahdanau Attention Model.
  - Bahdanau Attention is also known as Additive attention as well as it performs linear combination of encoder states and decoder states .
  - Basically it uses the encoder and decoder with attention model

# Sequence to Sequence Model

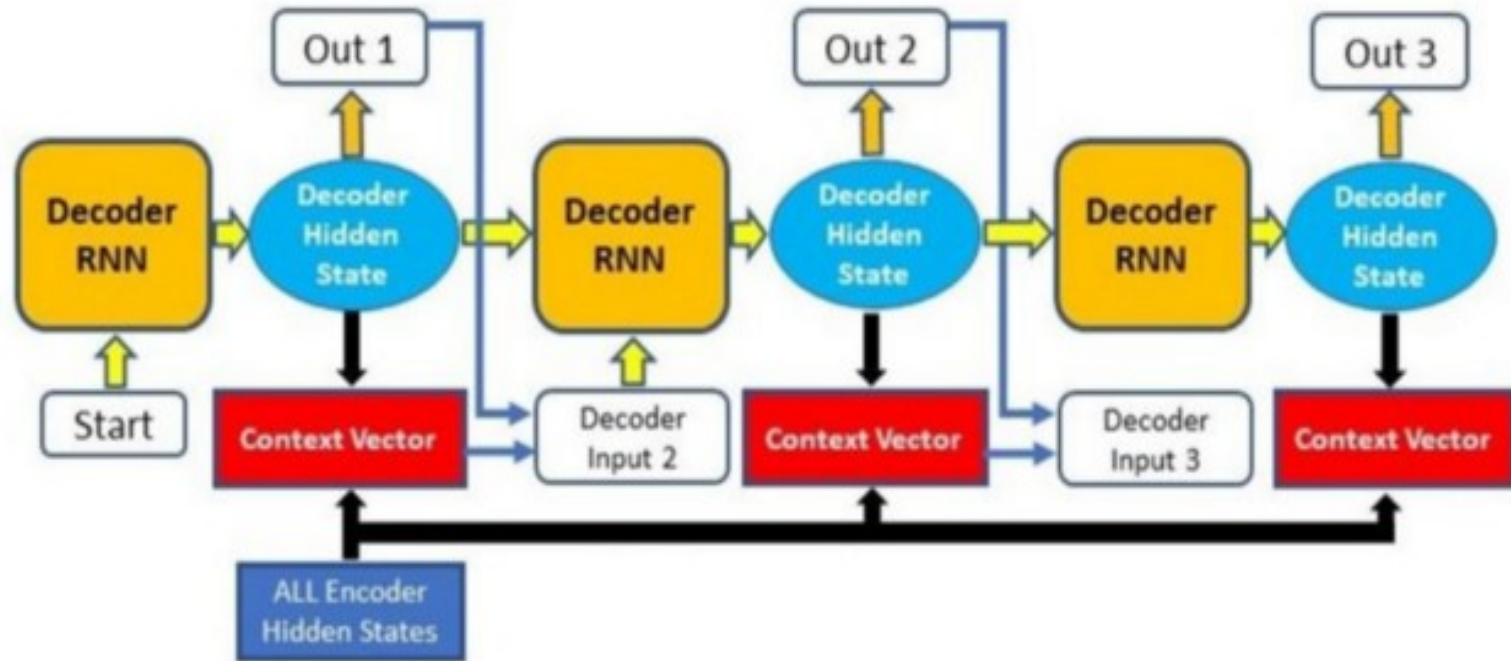


# Attention


Attention is focusing on what is important!!



# Bahdanau Attention





- 
- We trained the model with a dataset of around 1,00,000 sentences of English-Hindi.
  - Did some experimentation with different number of epochs.



- After 200 Epochs

Input: how are you ?

Predicted translation: आप कैसे है <end>

Input: i am going home .

[illegible]

Input: do you think it is worth to take risk ?

Predicted translation: क्या आप आप इसके यहाँ से एक छवि के उपकरण का <end>

Input: india is a great country .

[illegible]

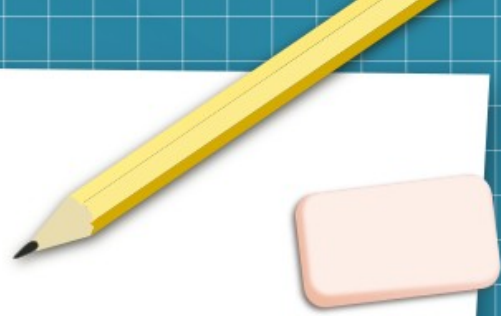
Input: how can i help you ?

Predicted translation: क्या आप इस के साथ क्या करना चाहूँगा की के <end>

Input: how is whether today ?

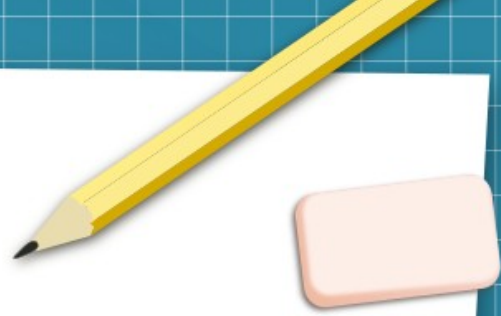
Predicted translation: इस चीज़ क्यों है <end>

# Comparison



- Drawbacks of GPT3
  1. Can't train for larger dataset.
  2. GPT3 doesn't retain what it has learned, so there is always a need to retrain it every time we are running the code.
  3. Not trained sufficiently for INDIC languages.

# Comparison

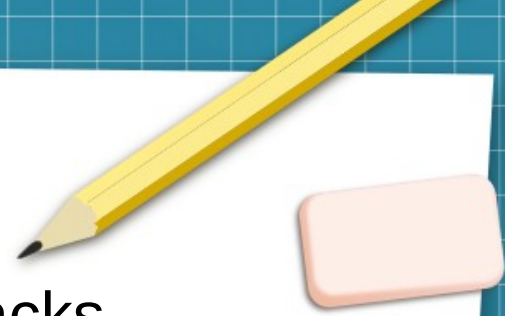


- Drawbacks of Tensorflow:
  1. Not dynamic like GPT3.
  2. Not easy to train like GPT3.
  3. For better performance will have to tweak it more.
  4. Will require better dataset to increase its performance.

# Conclusion

- GPT's later versions may solve its current drawbacks.
- Tensorflow with better training will improve the results a lot.
- Both the ways has there own strengths and weakness.

GPT3 allows one to use the model without much to worry while on other hand Tensorflow gives one control the model according to ones need.





THANK YOU!!!

