Deep Learning Crash Course Part-2 | Master Neural Networks & AI Fundamentals

Dr. Muhammad Aam...

1. Tokenization :-
   - → Process.
   - → Break.
   - → Sentences.
   - → word/terms.

The cat sat on mat.

"The", "cat", "sat", "on", "mat".

2. Stemming :-

Jumping / Jumped → "Jump"

- → reduce.
- → word.
- → derived word.
- → Root words / Stem.

1:30:08 / 11:33:16 • Key Term in NLP >

(3) Lemmatization- → similar to Stemming

But → retain the context.

→ Meaningful base form.

["good", "better", "best"] → Lemmas

["good", "good", "good"]

(4) Stop Words :- [a, an, the, of, in]

filter out.

"The cat sat on a mat" ⟶ ["cat", "sat", "mat"]

(4) Stop Words :- [a, am, the, of, in,]

filter out.

"The cat sat on a mat" ⟶ ["cat", "sat", "mat"]

(5) Bag of words (BoW)

= {a : 12, The; 31}

(4) Stop Words :- [a, an, the, of, in]

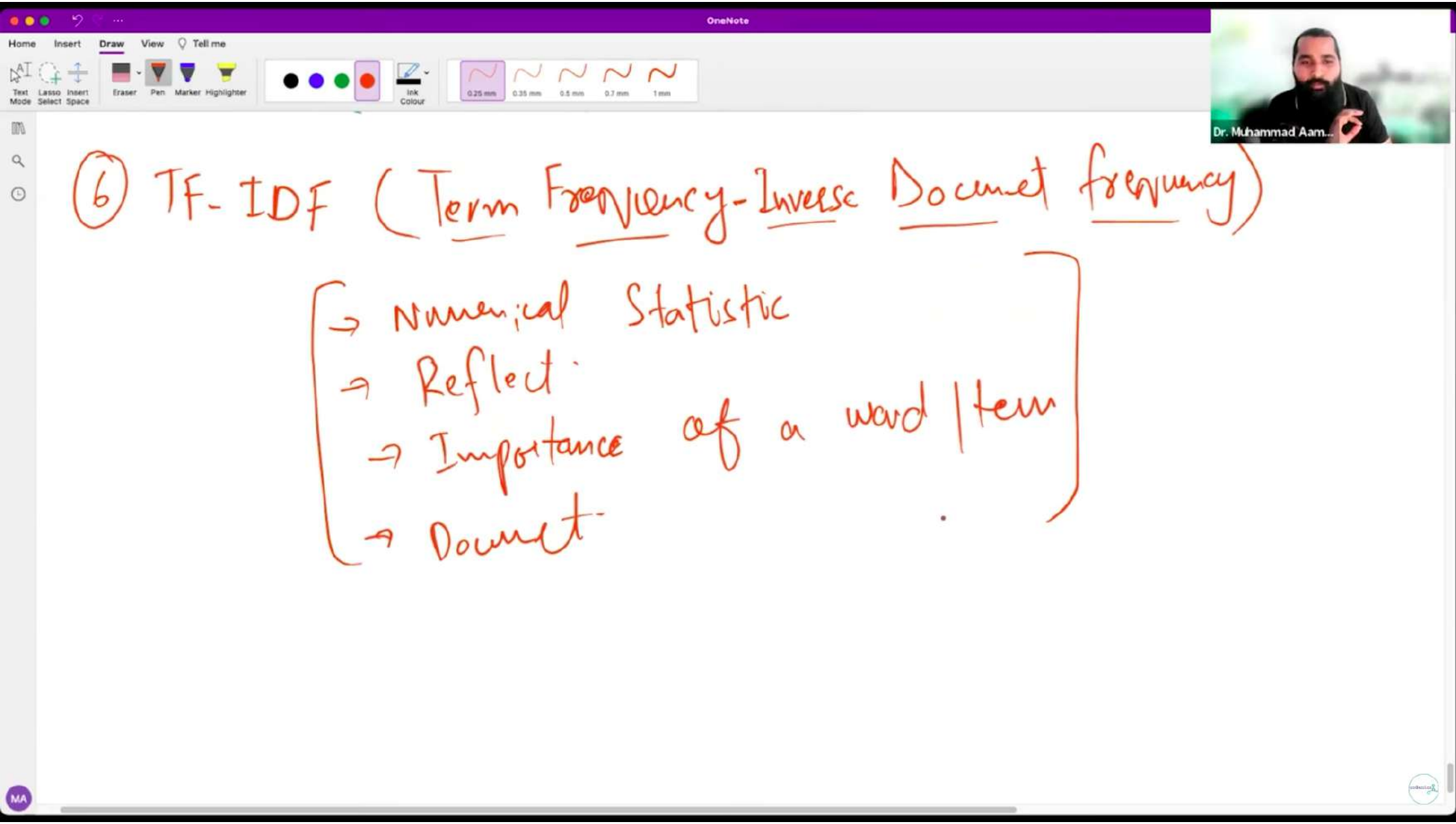
filter out.

"The cat sat on a mat" → ["cat", "sat", "mat"]

(5) Bag of words (BoW)

= {a : 12, The : 31} {cat : 12, sat : 13}

(frequency of each token)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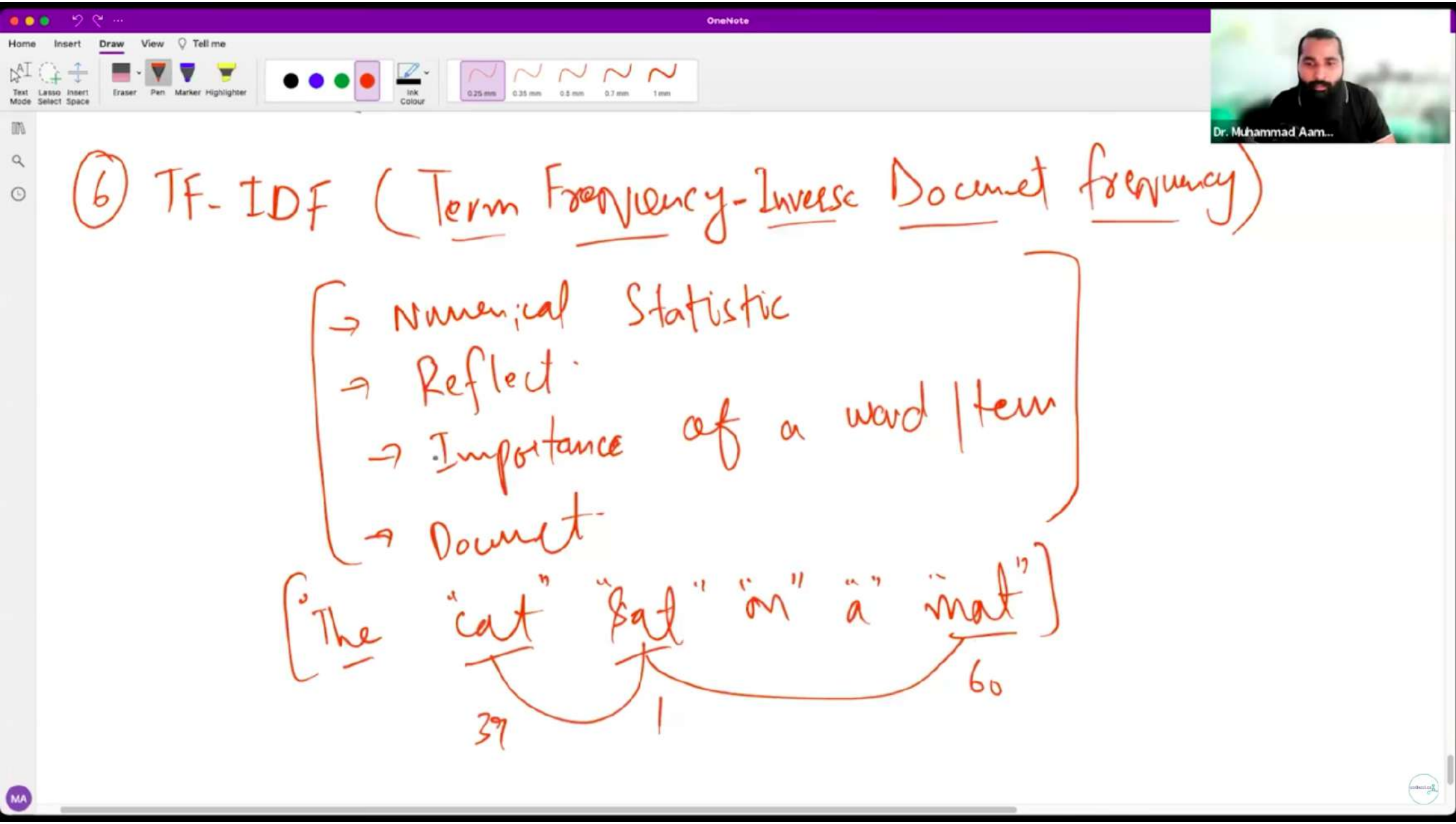
(6) TF-IDF (Term Frequency-Inverse Document frequency)
→ Numerical Statistic
→ Reflect
→ Importance of a word | term
→ Document
MA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6 TF-IDF (Term Frequency-Inverse Document frequency)
→ Numerical Statistic
→ Reflect
→ Importance of a word | term
→ Document
"The" "cat" "sat" "on" "a" "mat"
39
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(7) NER:- Named Entity Recognition:-

[Ali; works at google]

Ali → Name. → Person.

google → Organization.

[location, Codes

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(8) (POS):- Parts of Speech ~ Tagging:-

(noun, verbs, adjective)...

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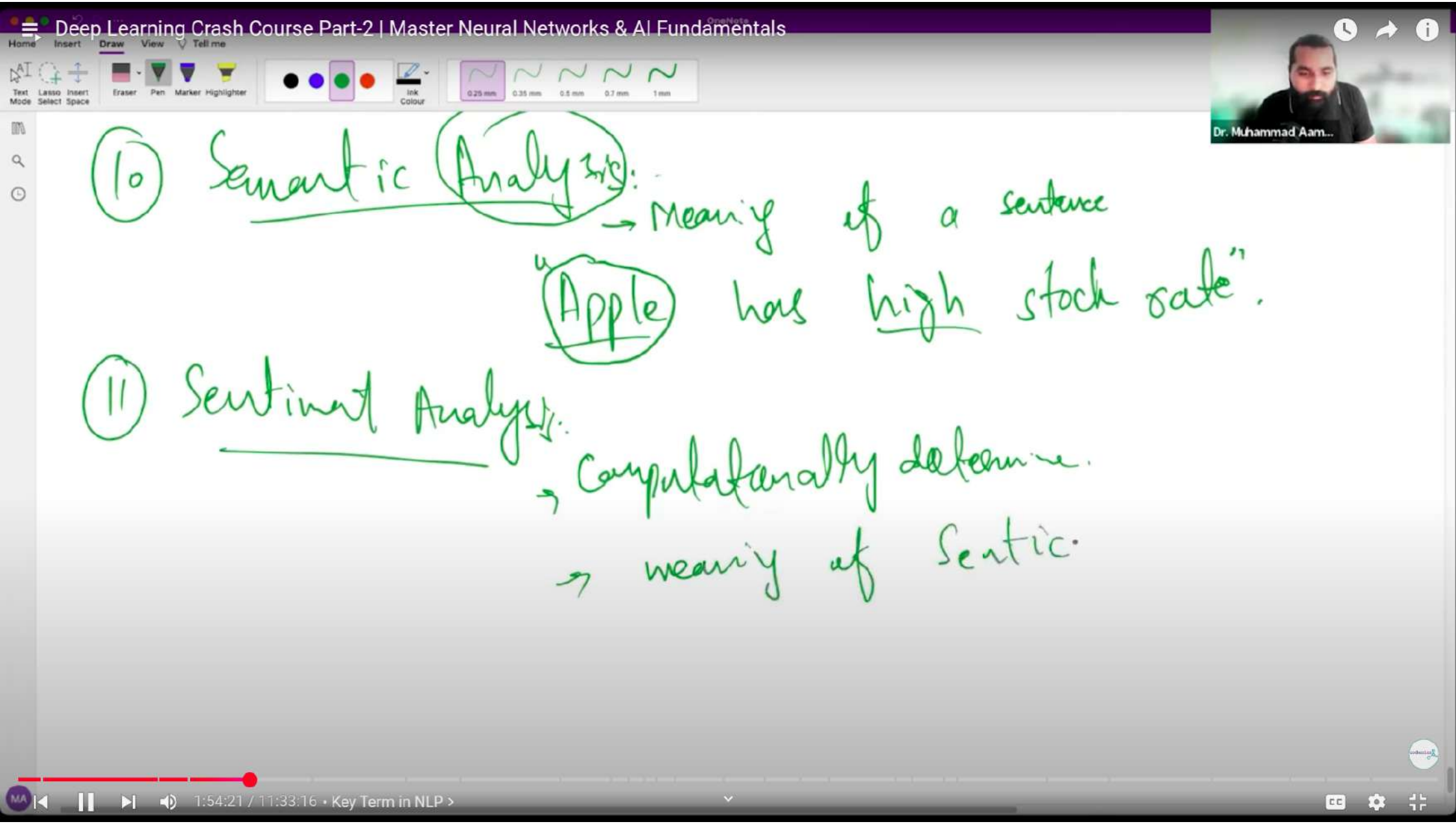
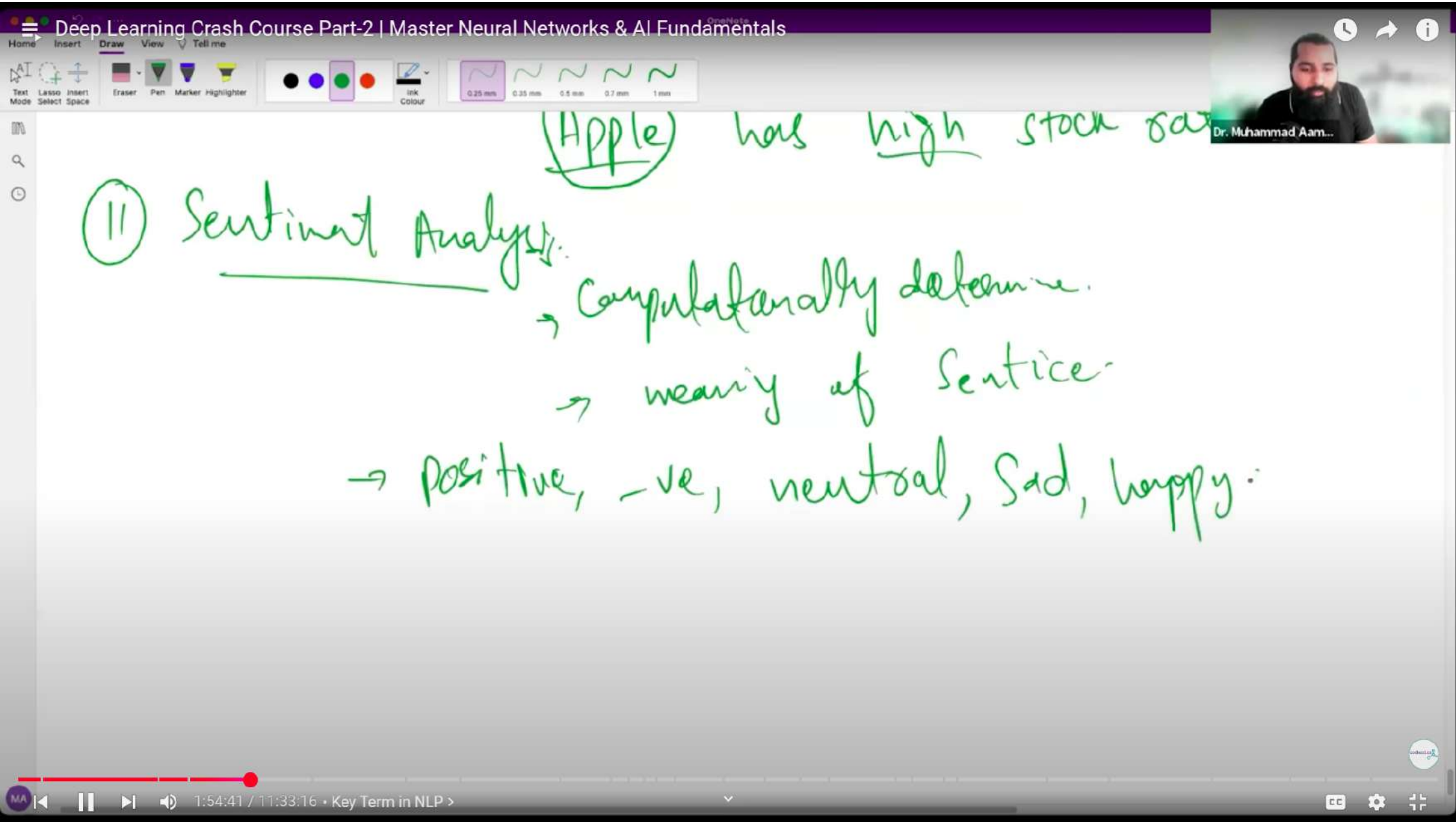
(9) Syntax and Passing :-

↳ Rules, principal.

(is siting)

" The cat is sit on mat".

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Apple has high stock
(11) Sentiment Analysis:
→ Computationally determine.
→ meaning of Sentice.
→ positive, -ve, neutral, Sad, happy.
1:54:41 / 11:33:16 • Key Term in NLP >

→ Computationally

→ meaning of sentence.

→ positive, -ve, neutral, Sad, happy.

"This movie is great." (positive)

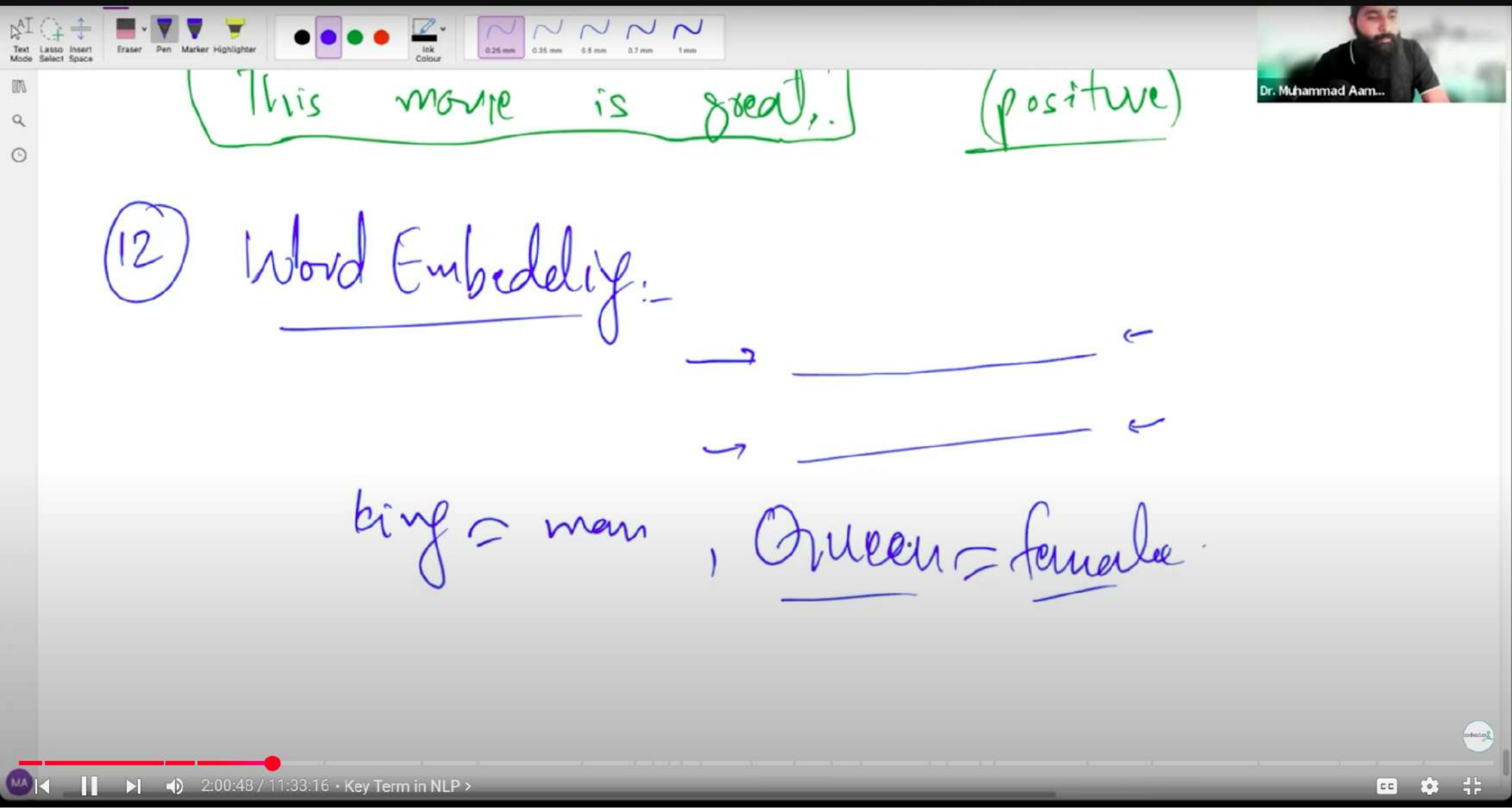
(11) Sentiment Analysis:

→ Computationally determine.

→ meaning of Sentice.

→ positive, -ve, neutral, Sad, happy,

"This movie is great." (positive)

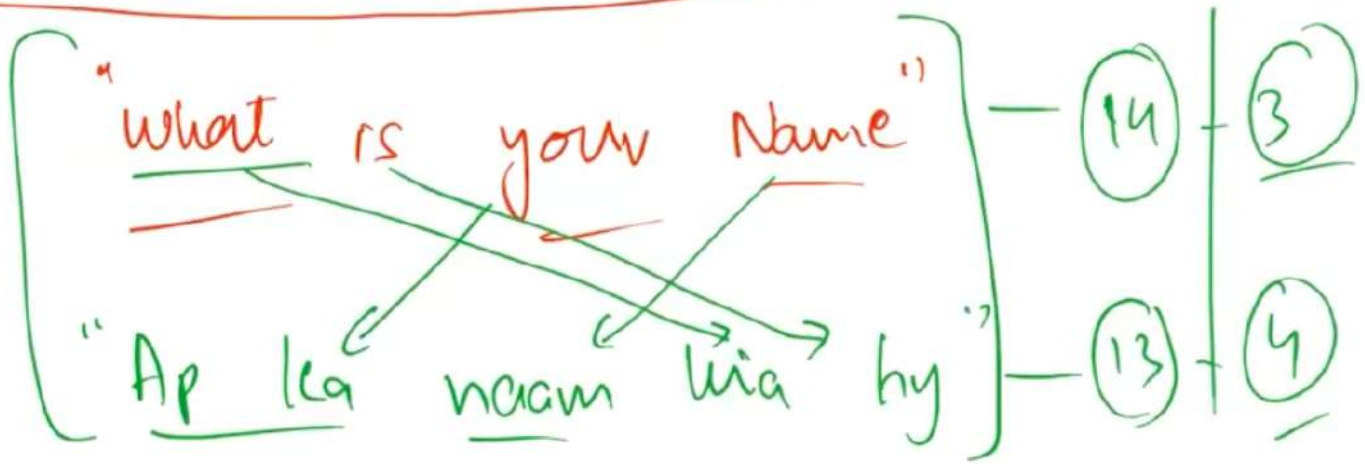


13 Sequence-to-Sequence Models

"What is your Name"

"Ap ka naam kia hai"

(13) Sequence-to-Sequence Models

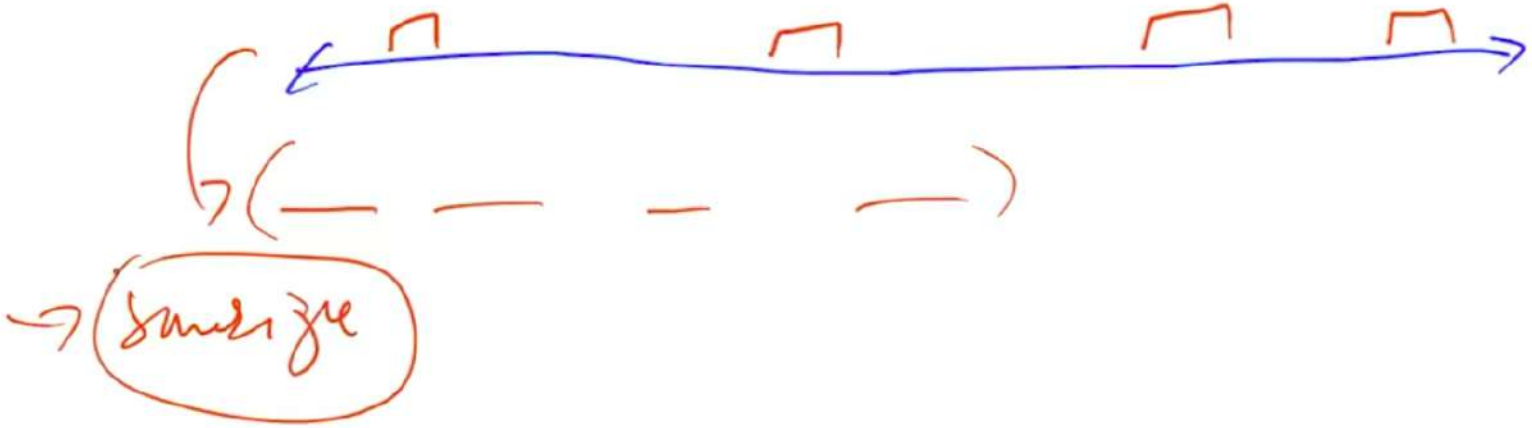


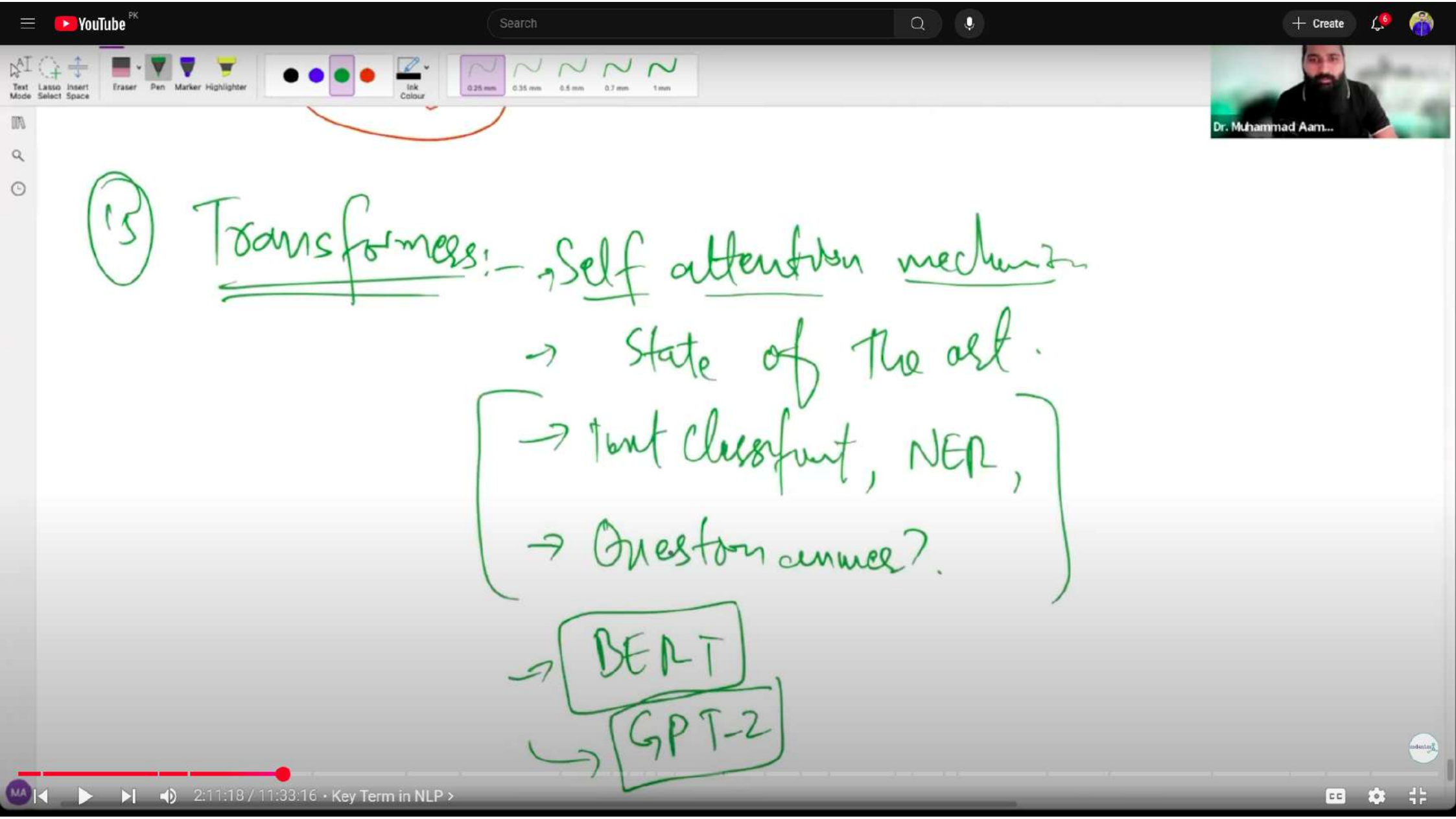
"Ap ka naam kia hy" — (13) + (4)

Alia, "Do you speak English."

"Parla englese?"

(14) Attention Mechanisms

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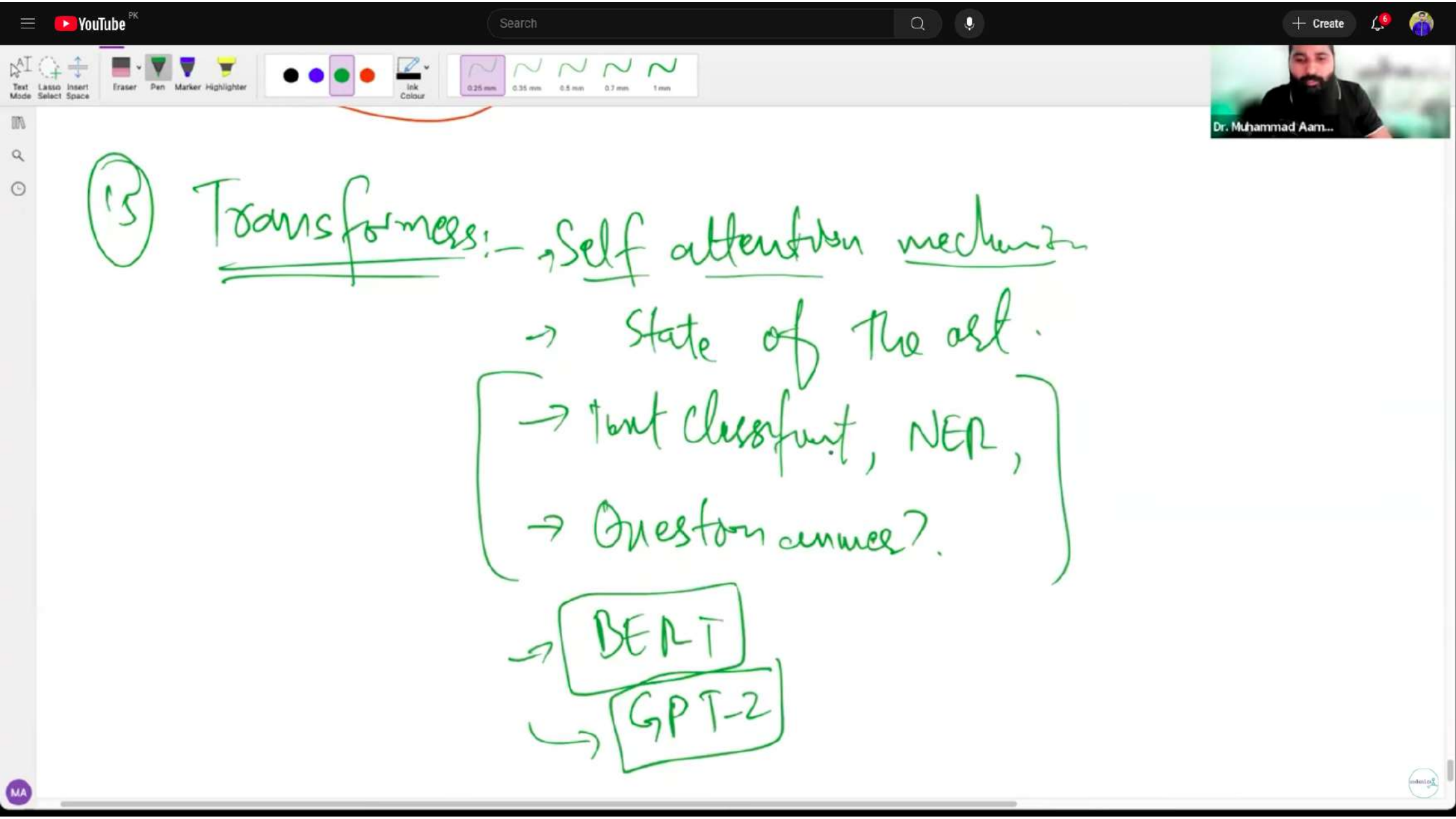
(5) Transformers:- Self attention mechanism
→ State of the art.
→ Text classification, NER,
→ Question answer?
→ BERT
→ GPT-2
2:11:18 / 11:33:16 • Key Term in NLP >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15
Transformers:- → Self attention mechanism
→ State of the art.
→ Text classification, NER,
→ Question answer?
→ BERT
→ GPT-2
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(5) Transformers:- → Self attention mechanism

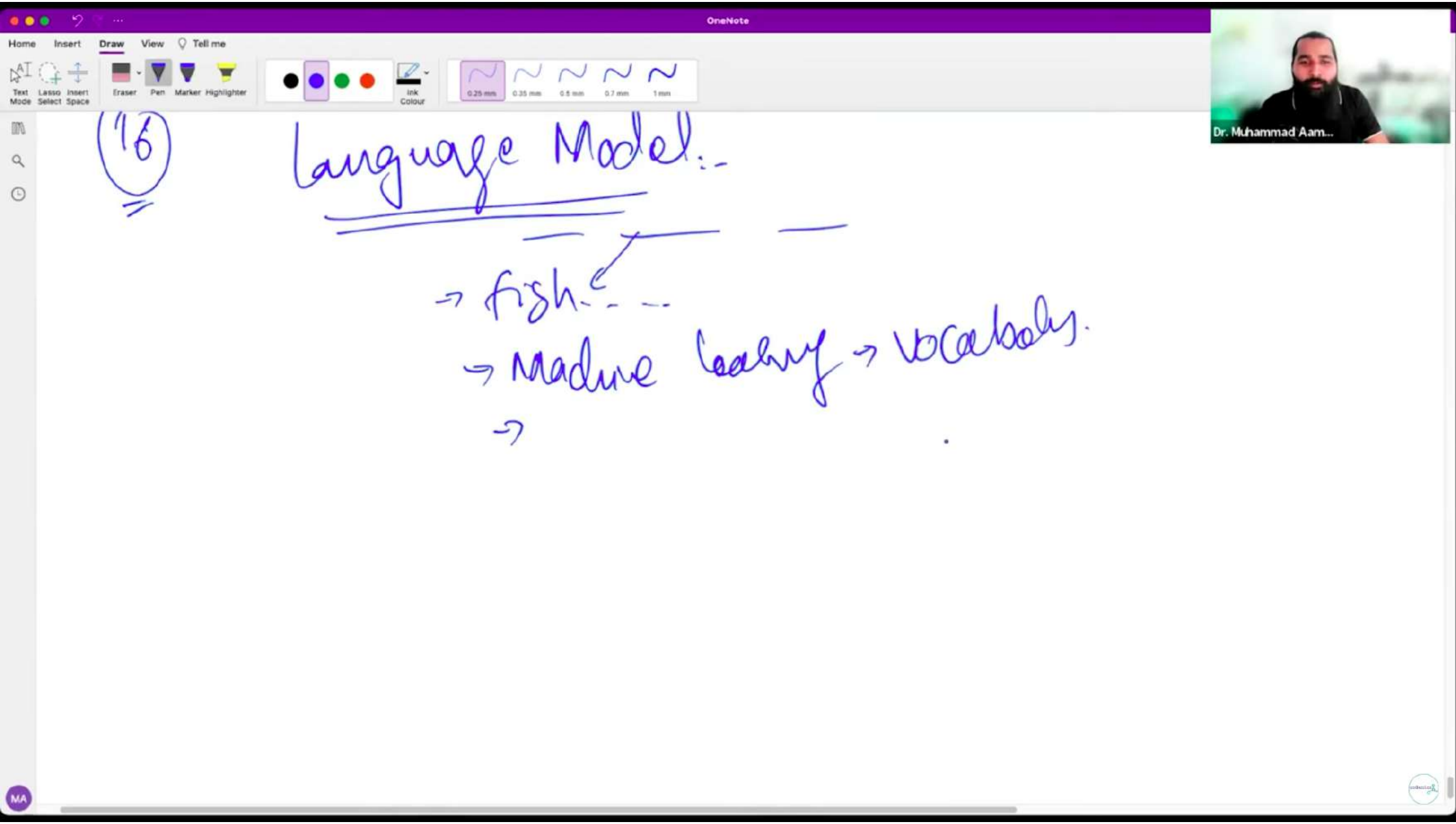
→ State of the art.

→ Text classification, NER,

→ Question answer?

→ BERT

→ GPT-2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16
Language Model:-
→ fish
→ Madine
→ vocabulary.
→
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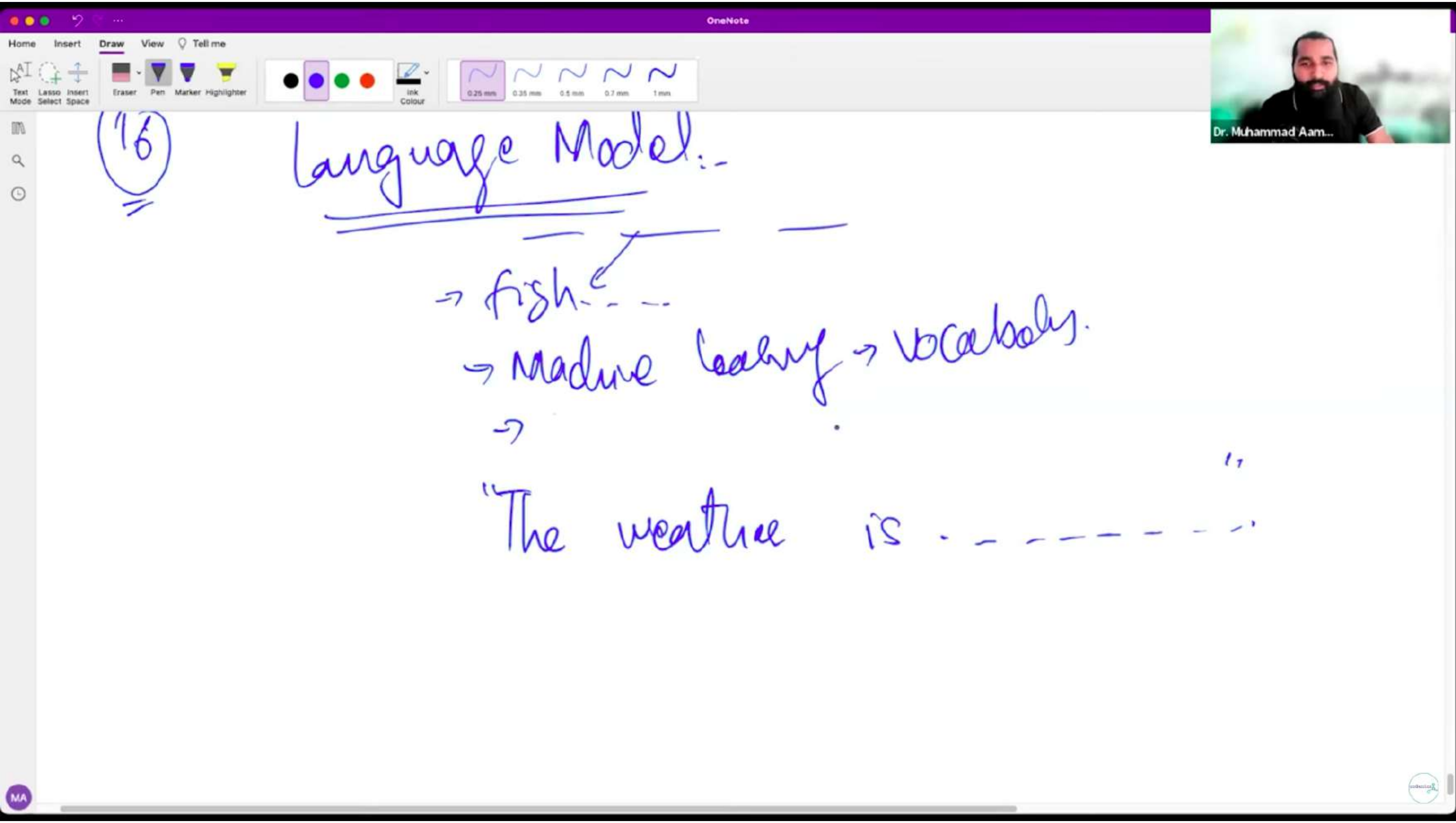
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Language Model:-
→ fish - - -
→ Machine learning → vocabulary.
→
"The weather is . _ _ _ _ _ _ _ ."

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BERT:-

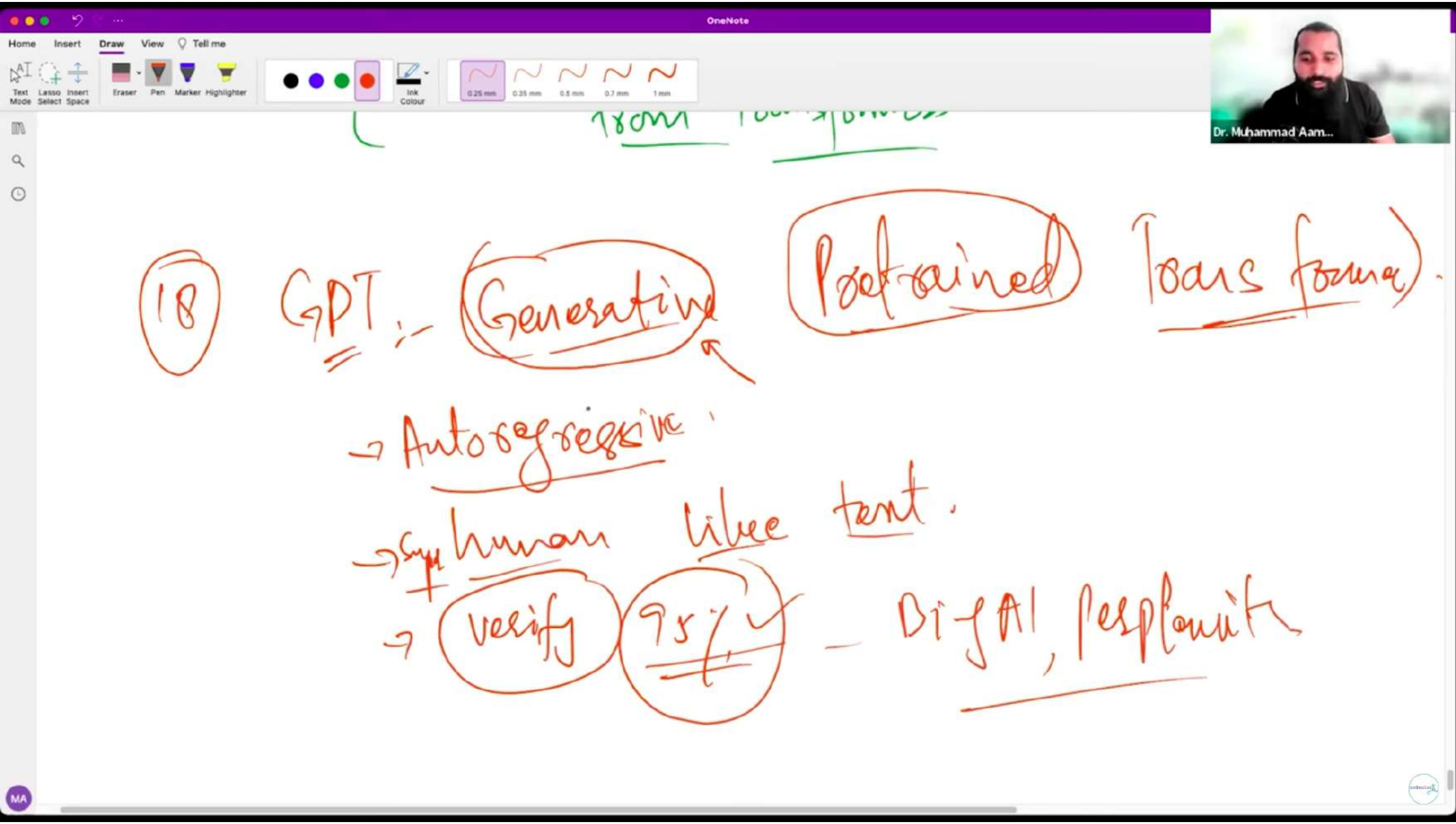
Bidirectional. Encodes Representations from Transformers.

18 GPT :- Generative Pretrained Transformer.

→ Autoregressive.

→ Human like text.

→ verify 95%.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GPT :-
Generative
Pretrained
Transformer.
→ Autoregressive.
→ Human like text.
→ verify
- DigAI, Perplexity
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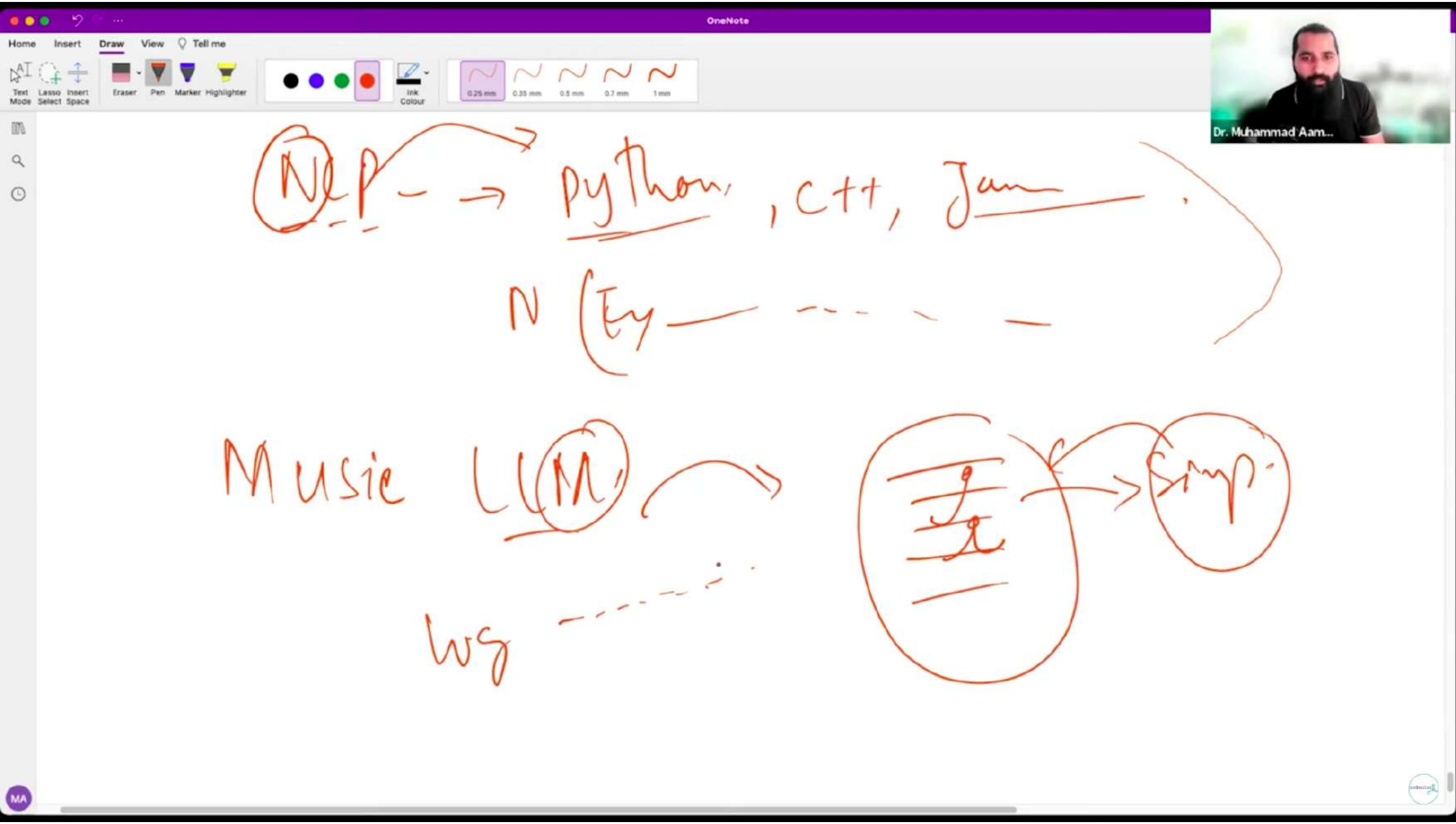
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