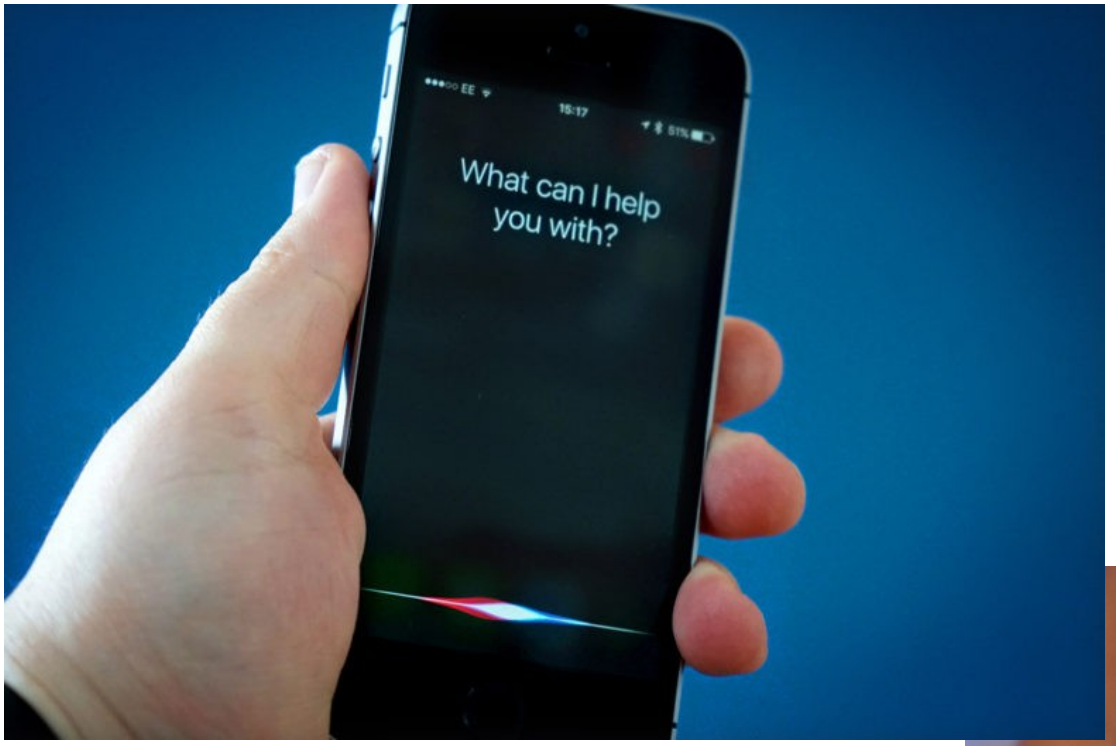
Speech Synthesis Workshop
@ Higher School of Economics
Moscow

Josh Meyer

@joshmeyerphd

jrmeyer.github.io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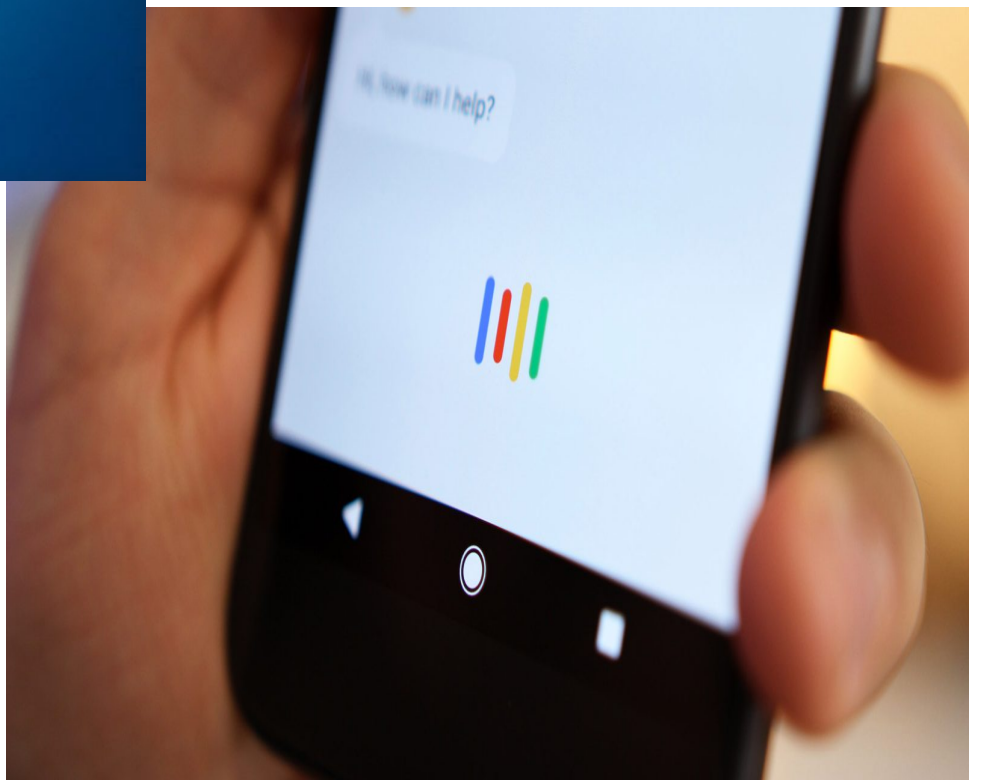

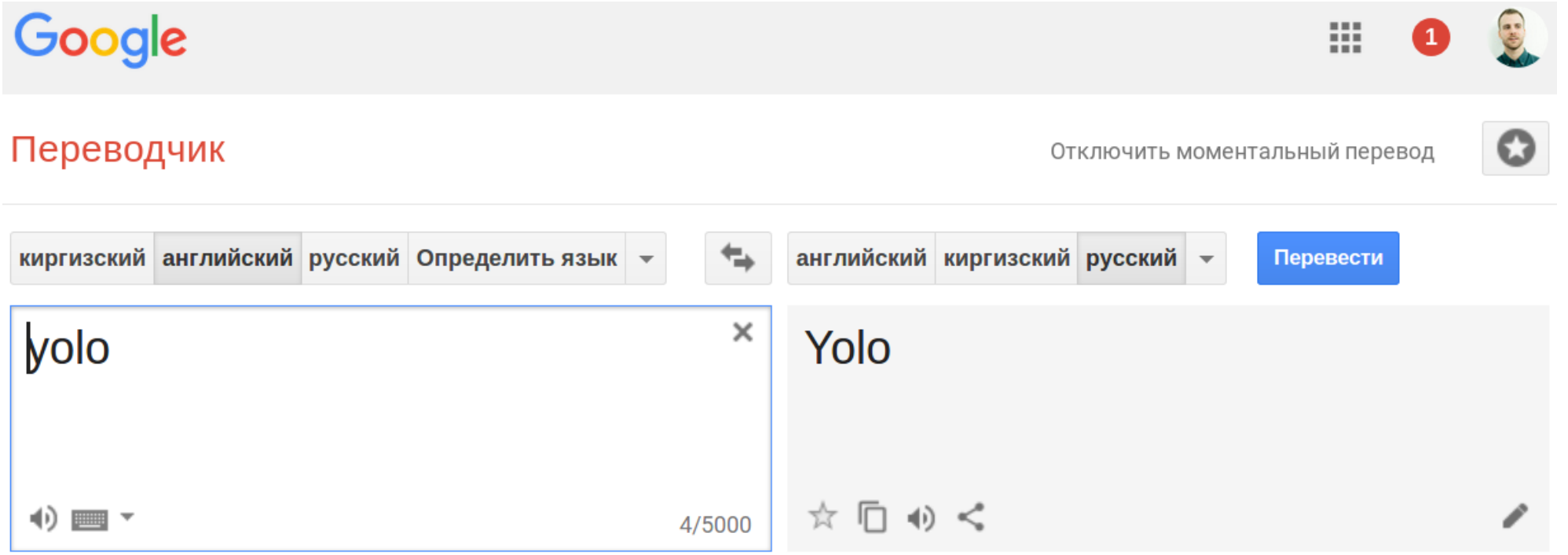
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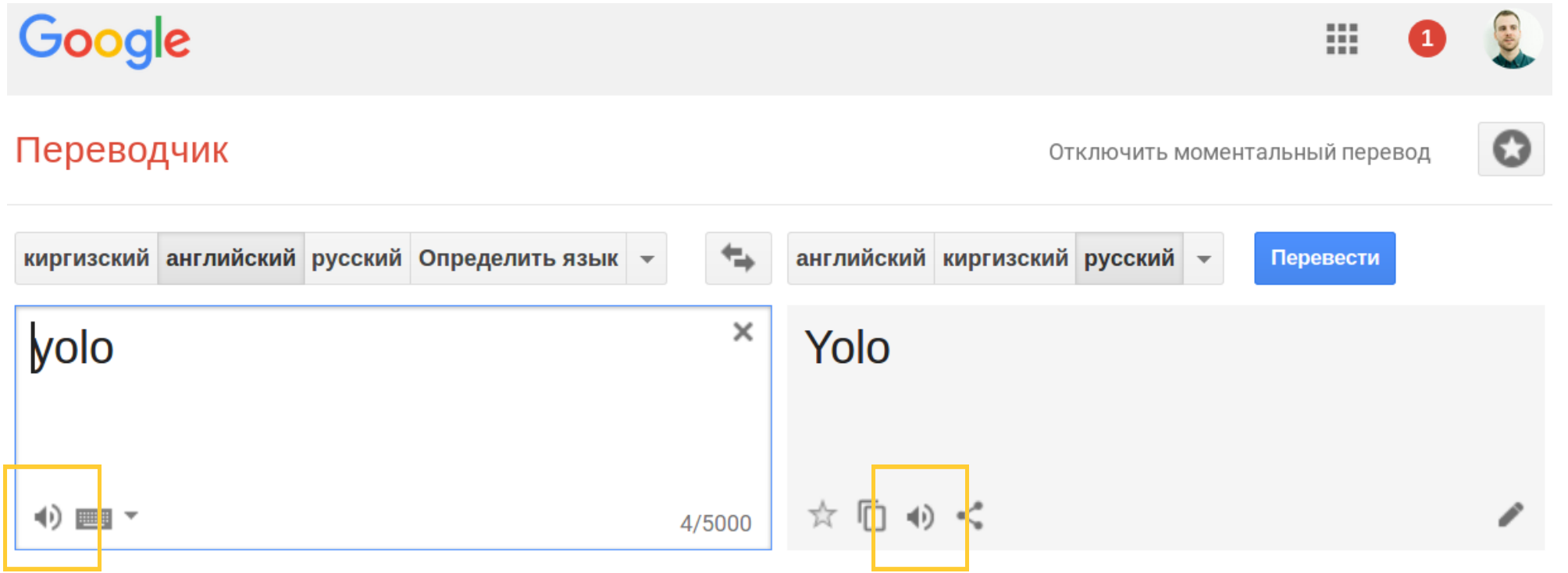
Переводчик
Отключить моментальный перевод
киргизский
английский
русский
Определить язык
английский
киргизский
русский
Перевести
yolo
4/5000
Yolo


Google
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Переводчик
Отключить моментальный перевод
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Определить язык
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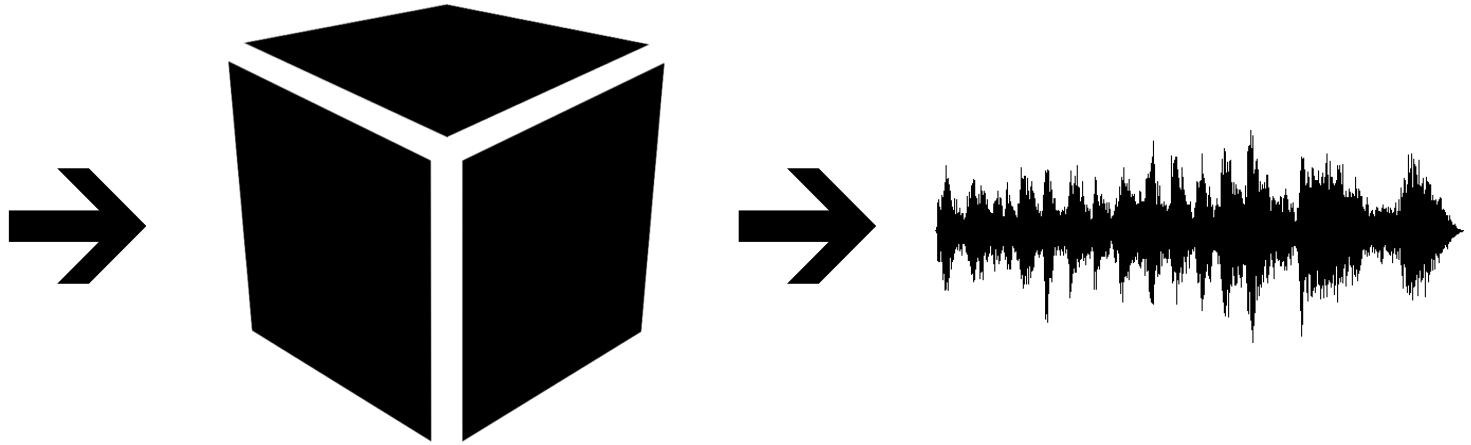
киргизский
русский
Перевести
yolo
4/5000
Yolo

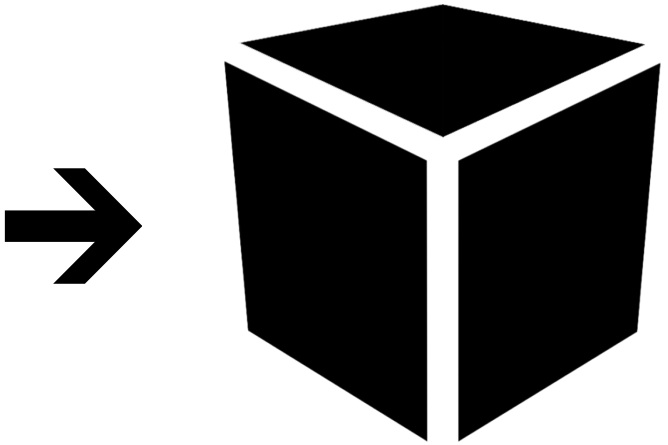
Moscow always has traffic jams.



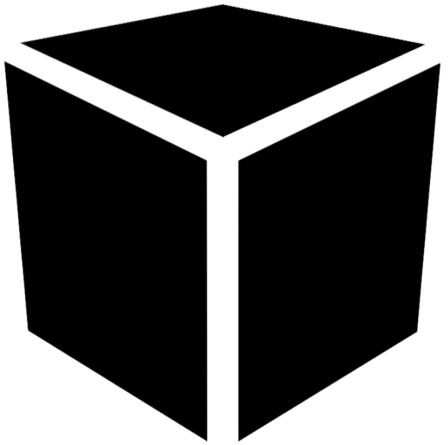
RAW TEXT

RAW AUDIO

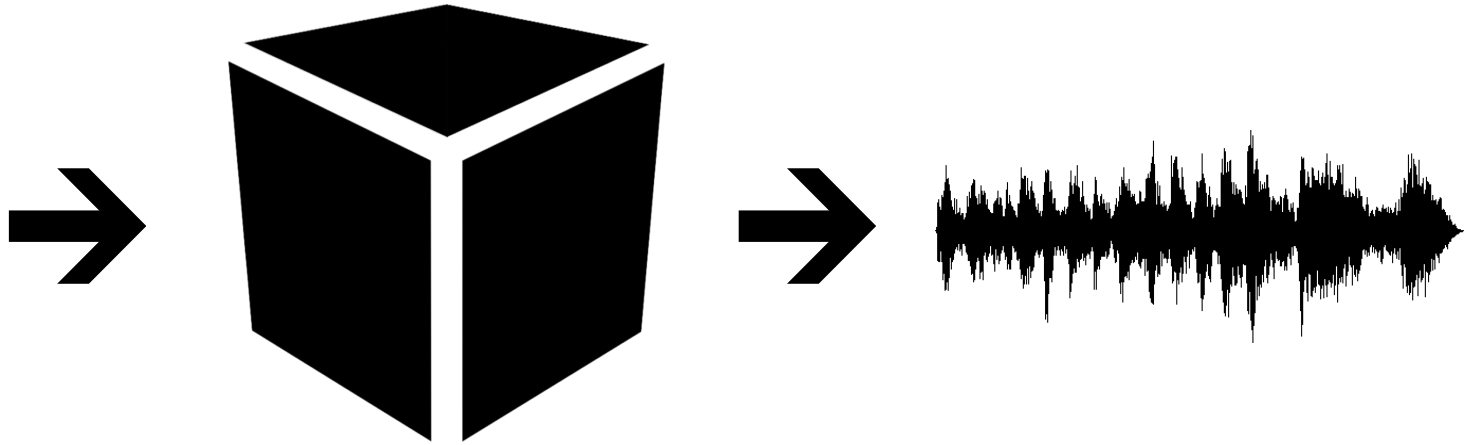
Moscow always has traffic jams.



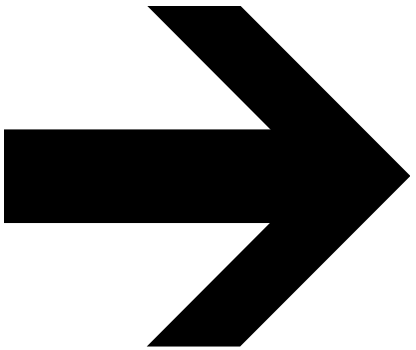
RAW TEXT → **SPEECH SYNTHESIZER** → **RAW AUDIO**

Moscow always has traffic jams. →  → 

Moscow always has traffic jams.

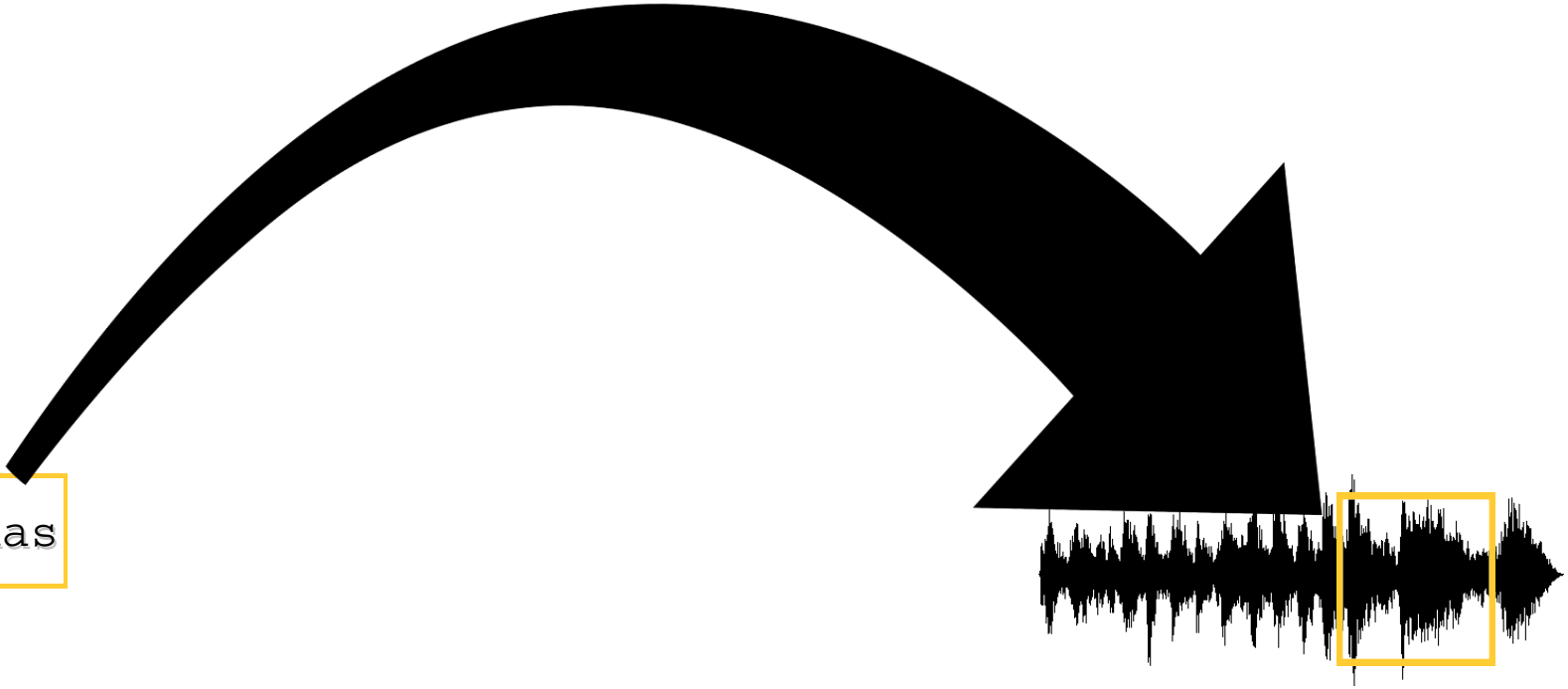


Moscow always has traffic jams.



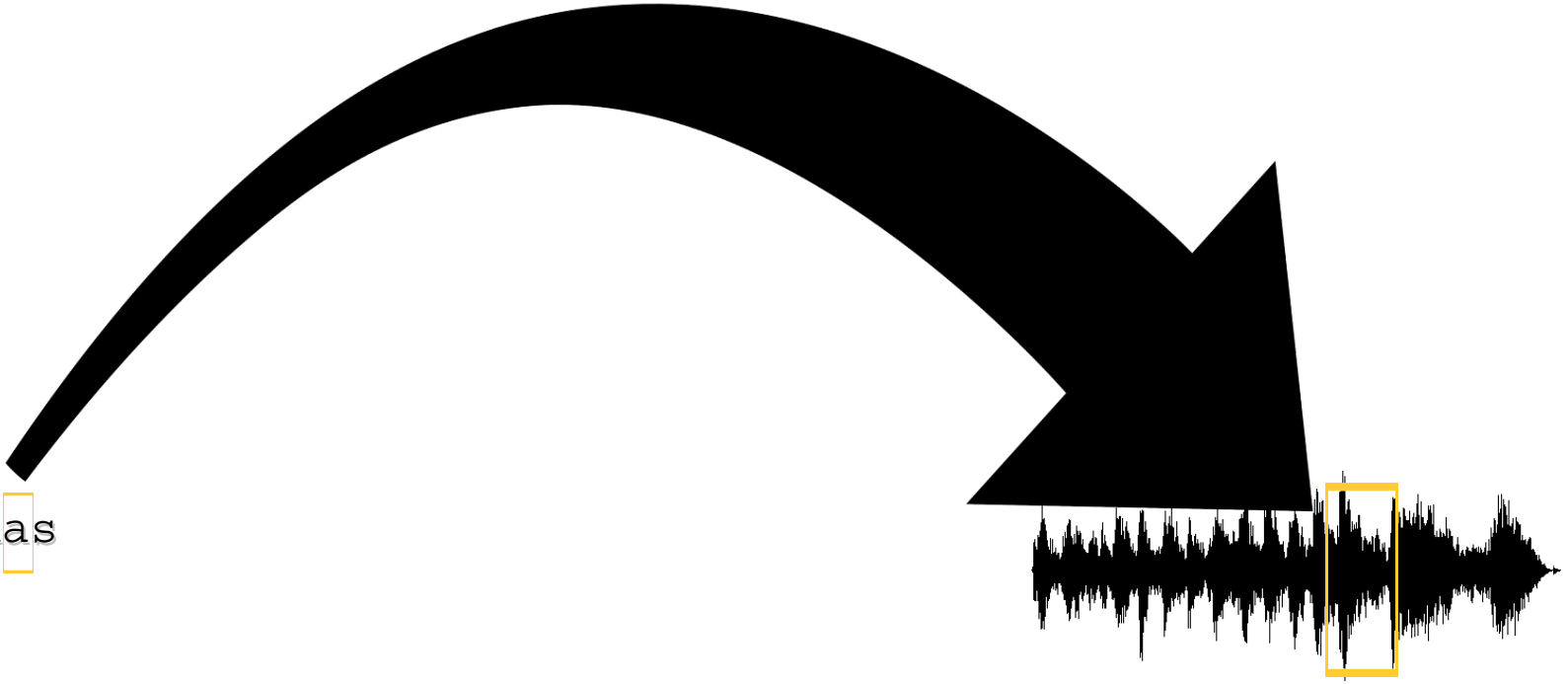
HARD

Moscow always has
traffic jams.



HARD

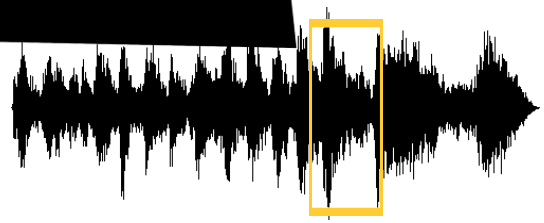
Moscow always has
traffic jams.



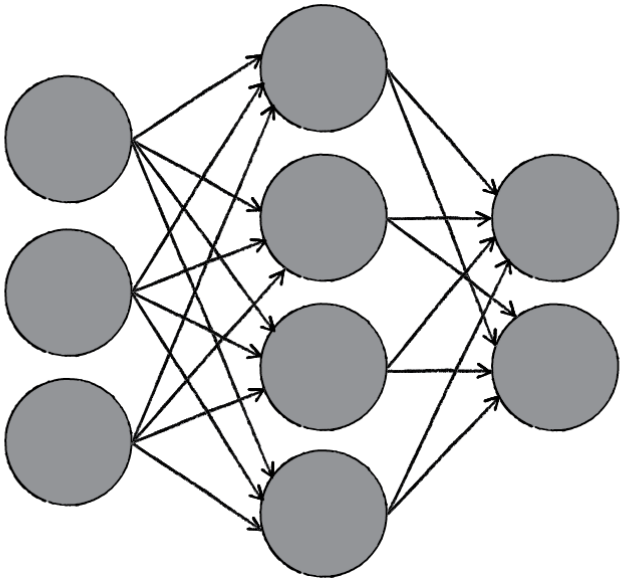
EASIER

REGRESSION

Moscow always has
traffic jams.



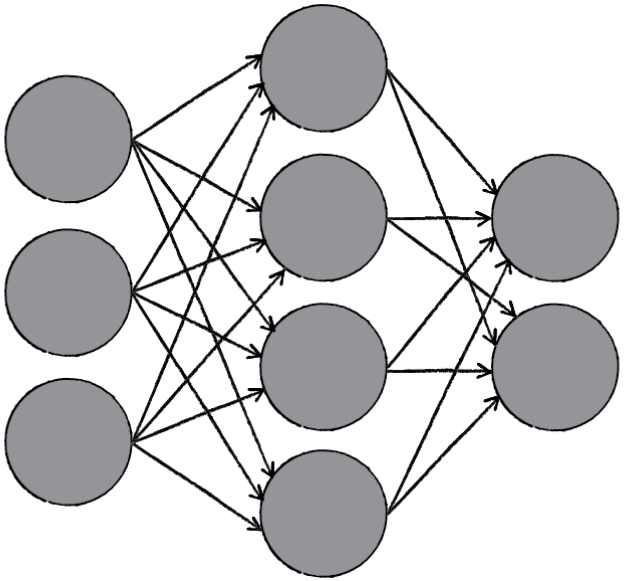
Moscow always has traffic jams.

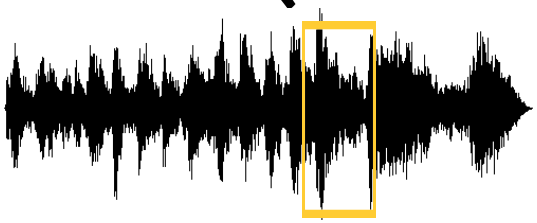


BECAUSE

DNNs

Moscow always has
traffic jams.





Moscow always has
traffic jams.

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[6010000000000008]

FRONTEND

Moscow always has
traffic jams.

[0010000007000230100000000009000]

[6010000000000008]

BACKEND

THE FRONTEND

(text feature extraction)

THE FRONTEND

1) MOTIVATION

Moscow always has
traffic jams.

Moscow always has traffic jams .

WORDS

Moscow always has
traffic jams.

M o s c o w a l w a y s h a s t r a f f i c j a m s .

LETTERS

Moscow always has
traffic jams.

M ah s k o ah L w ei z h ae z chr ae f I k dj ae m z

PHONEMES

Moscow always has
traffic jams.

[M ah s k o] [ah L w ei z] [h ae z] [chr ae f I k]
[dj ae m z]

PHONEMES + WORDS

Moscow always has
traffic jams.

[NOUN M ah s k o] [ADVERB ah L w ei z] [VERB h ae z]
[NOUN chr ae f I k] [NOUN dj ae m z]

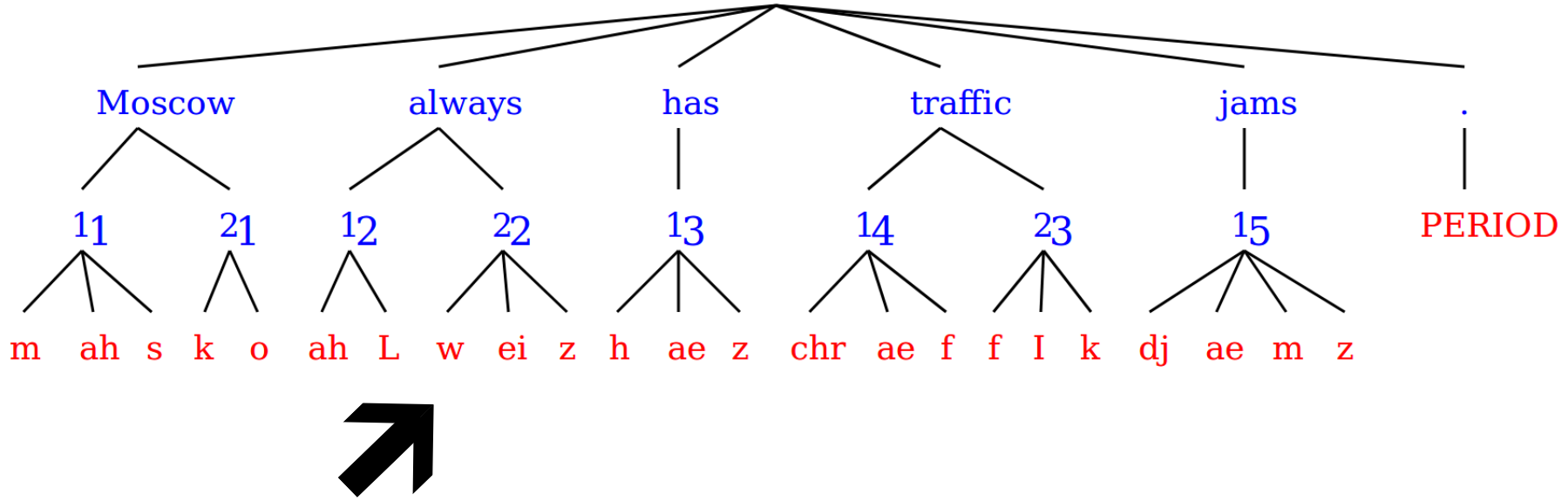
PHONEMES + WORDS + POS

Moscow always has
traffic jams.

[NOUN [M ah][s k o]] [ADVERB [ah L][w ei z]]
[VERB [h ae z]] [NOUN [chr ae][f I k]]
[NOUN [dj ae m z]]

PHONEMES + WORDS + POS
+ SYLLABLES

Moscow always has
traffic jams.



Moscow always has
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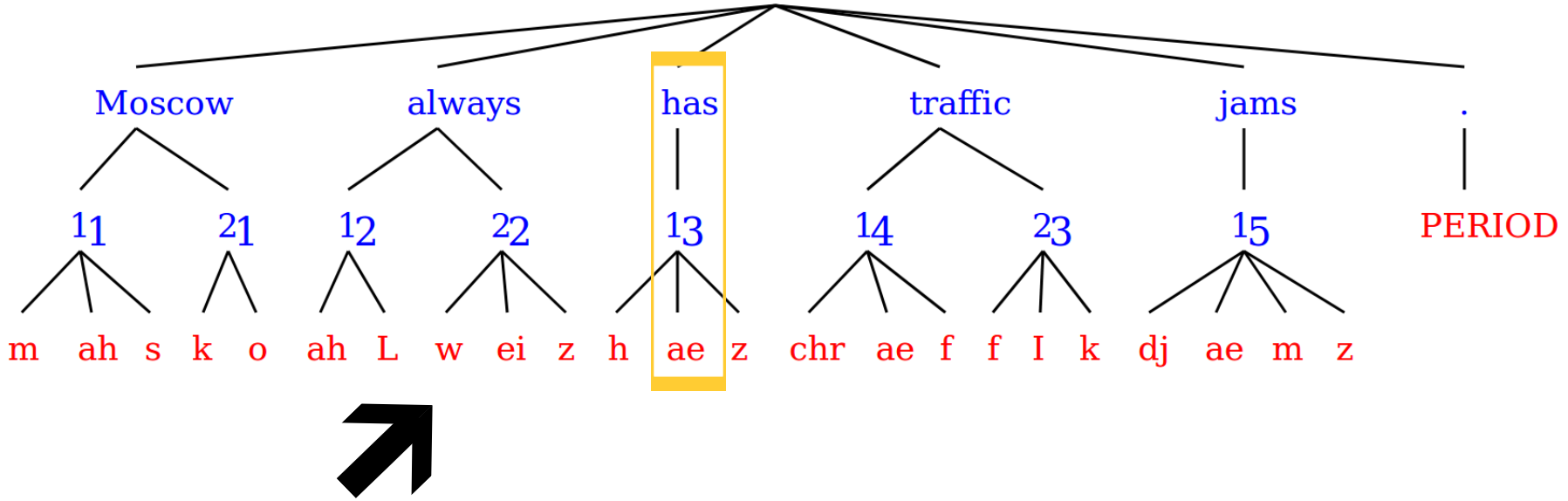

Moscow always has
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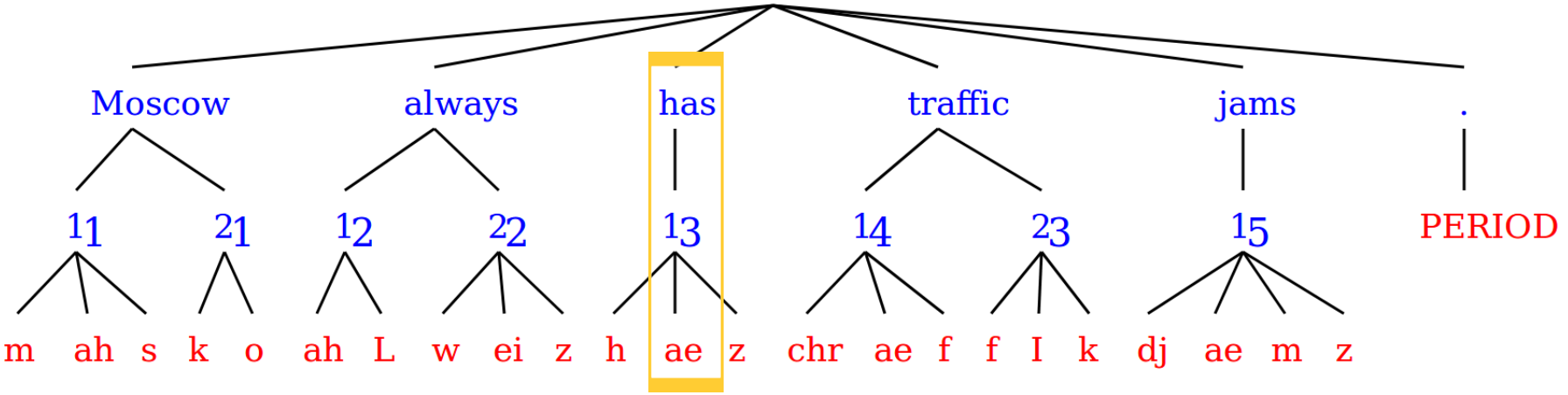

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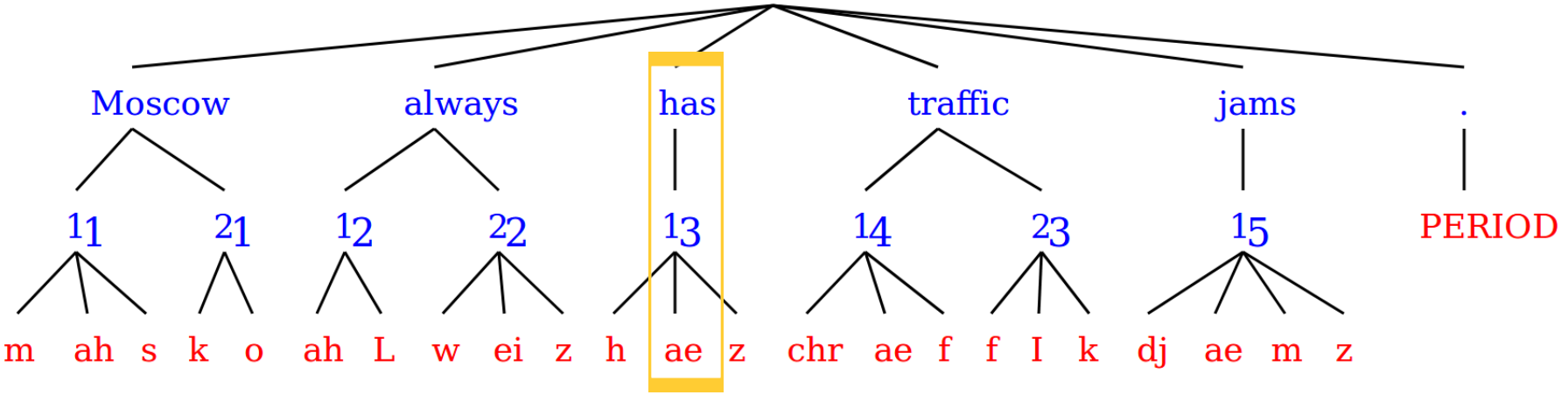

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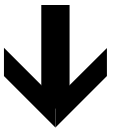

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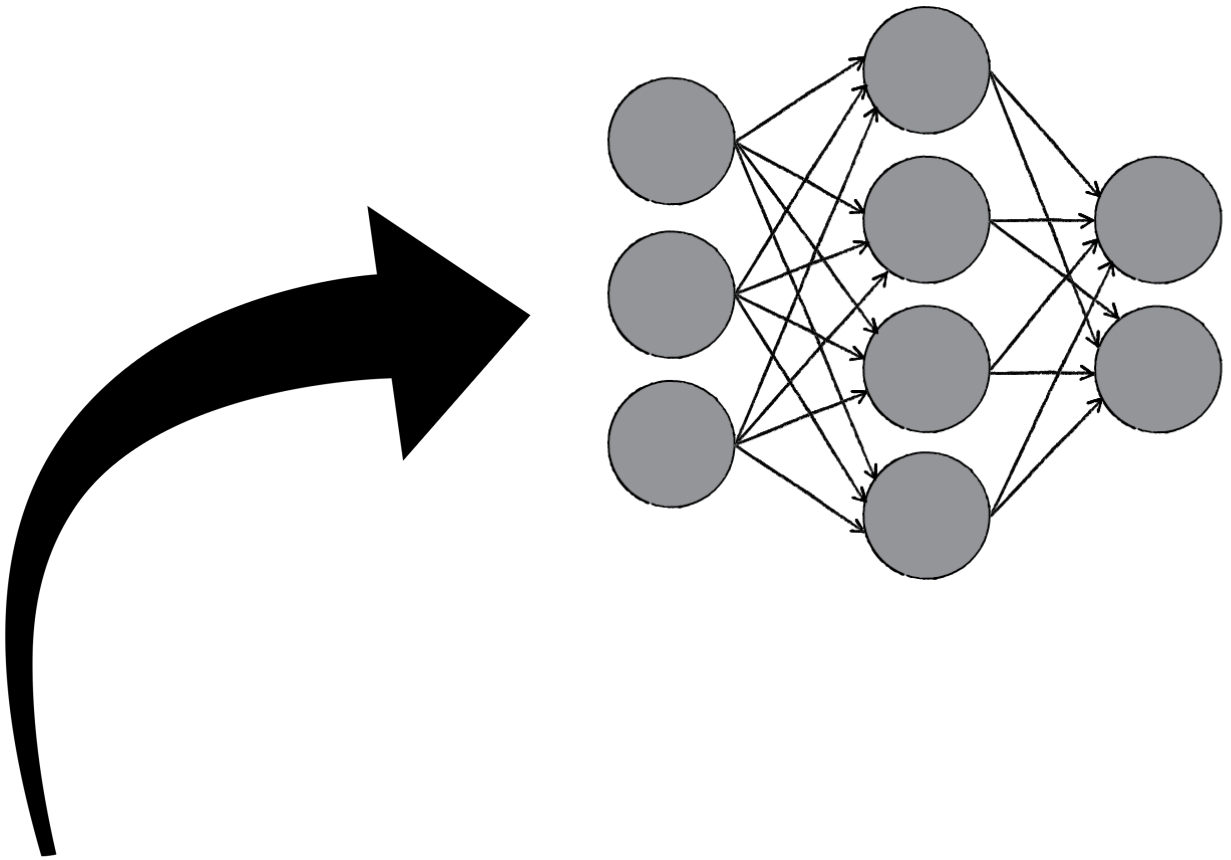

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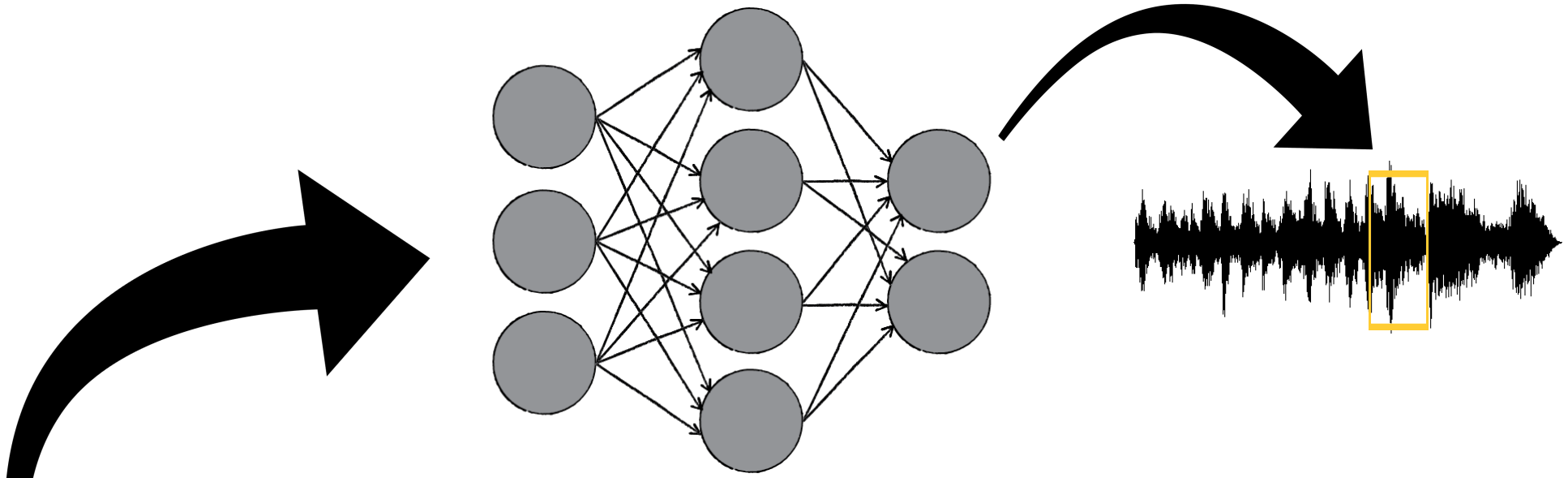

[0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0]

THE FRONTEND

1) MOTIVATION

2) TEXT → XML

Фильмсем 13 е 13:30 сехетре пуçланĕç.

Фильмсем 13 е 13:30 сехетре пуçланӗç.

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Фильмсем 13 е 13:30 сехетре пуçланӗç.

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Фильмсем 13 е 13:30 сехетре пуçланӗç.

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Фильмсем 13 е 13:30 сехетре пуçланӗç.

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Фильмсем 13 е 13:30 сехетре пуçланӗç.

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Фильмсем 13 е 13:30 сехетре пуçланĕç.

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YRILLICSMALLLETTEREM__CYRILLICSMALLLETTERES__CYRILLICS
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Фильмсем 13 е 13:30 сехетре пуçланĕç.

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Фильмсем 13 е 13:30 сехетре пуçланĕç.

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Фильмсем 13 е 13:30 сехетре пуçланĕç.

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>

PHONES →

</token>

Фильмсем 13 е 13:30 сехетре пуçланĕç.

<token text="13" token_class="word"

SAFETXT → safetext="_DIGITONE__DIGITTHREE_"

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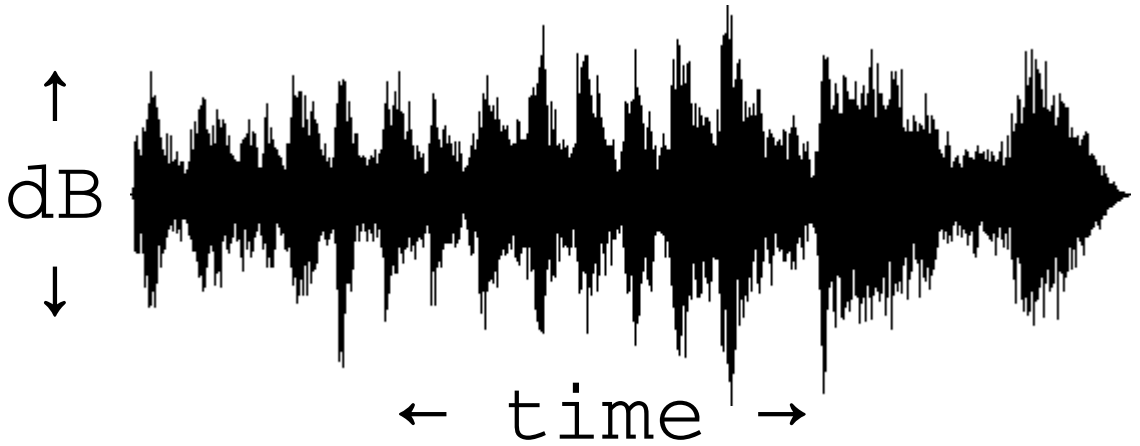
PHONES →

</token>

THE BACKEND

(audio feature extraction)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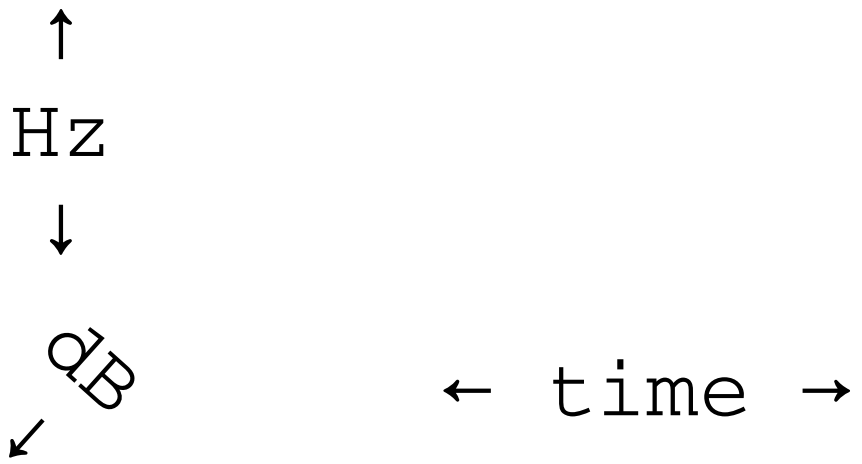
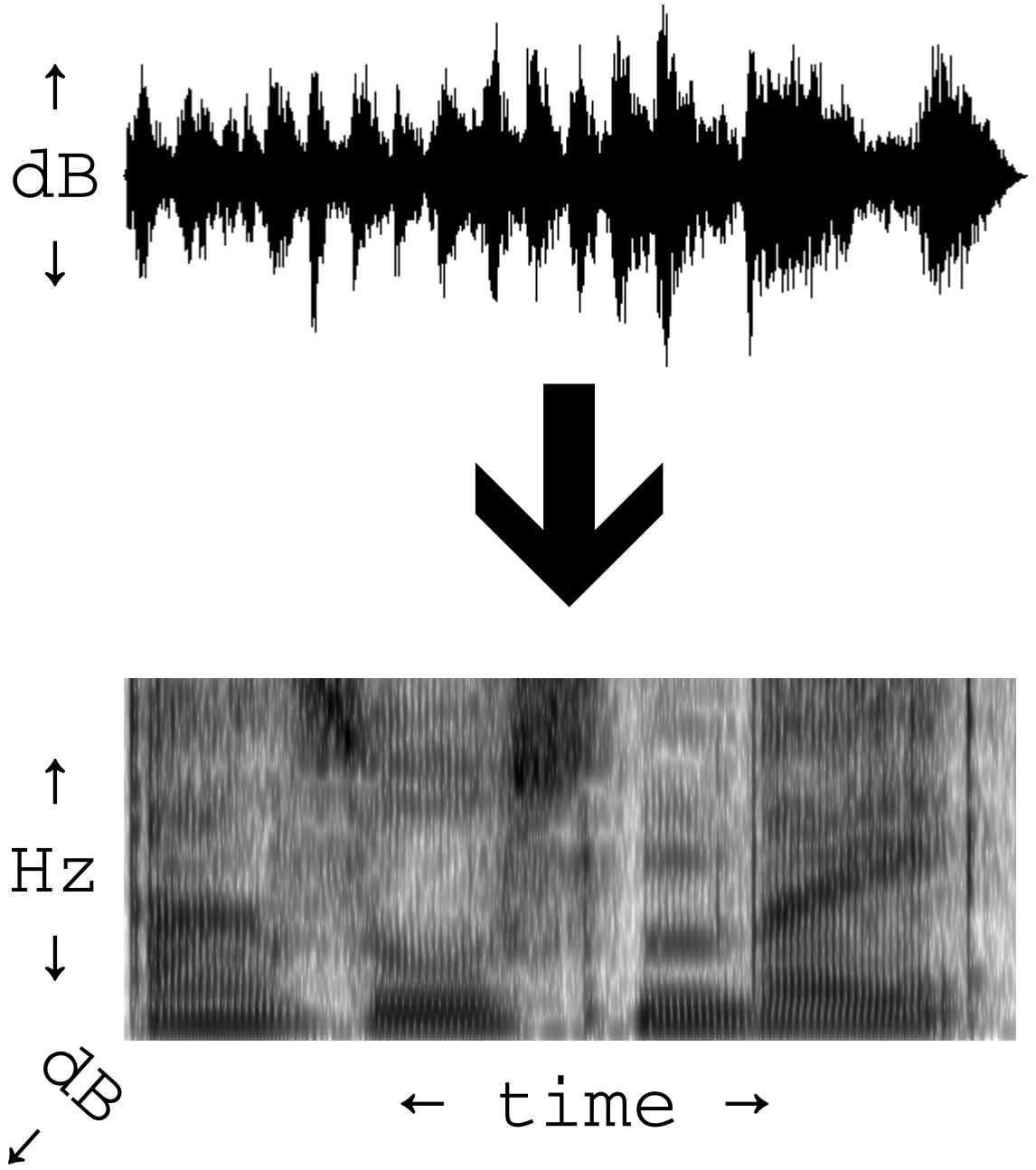
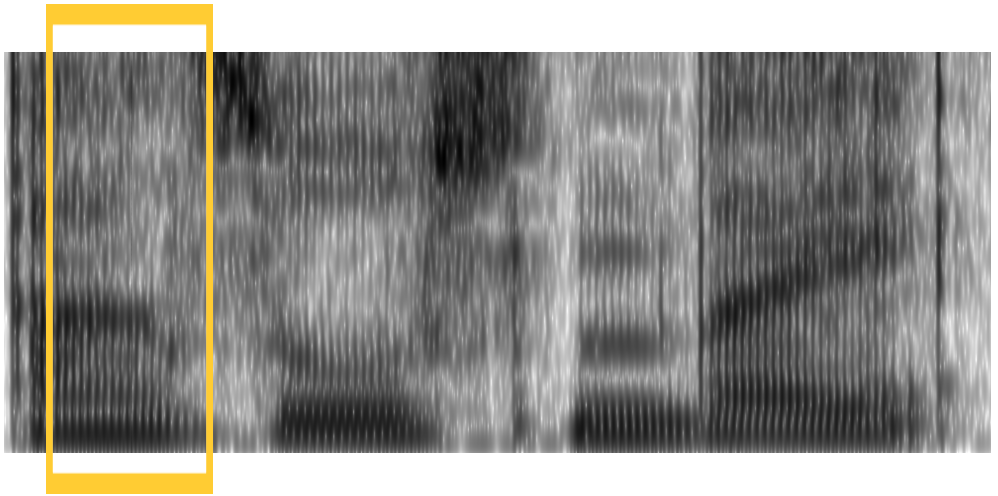
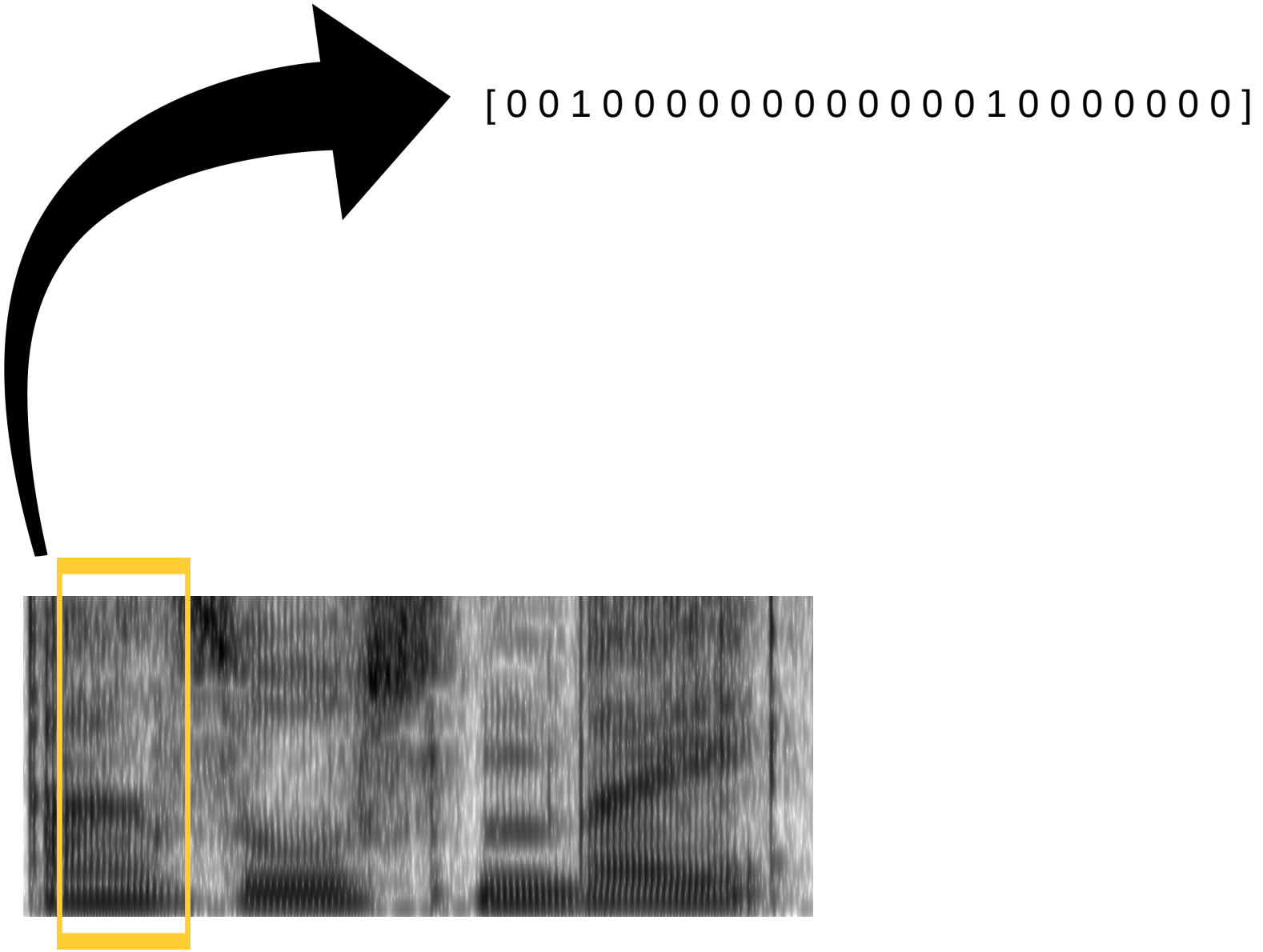
dB
↓
← time →


↑
dB
↓


↑
Hz
↓
dB
↙
← time →


↑
dB
↓
↑
Hz
↓
dB
← time →

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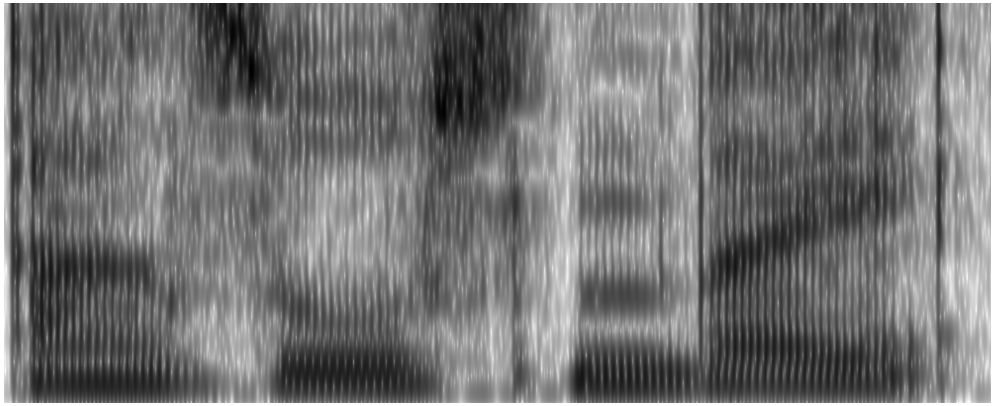
REGRESSION

REGRESSION

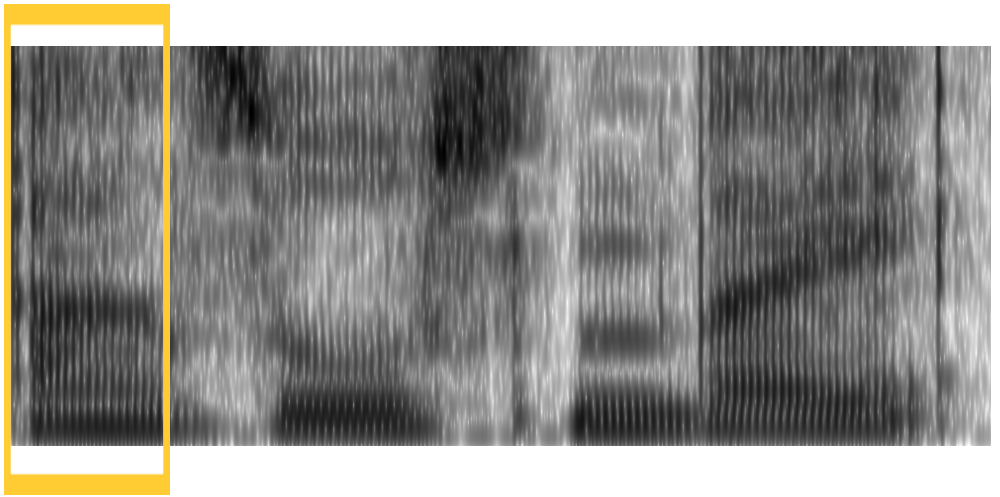
1) LABELED DATA

Moscow always has traffic jams.

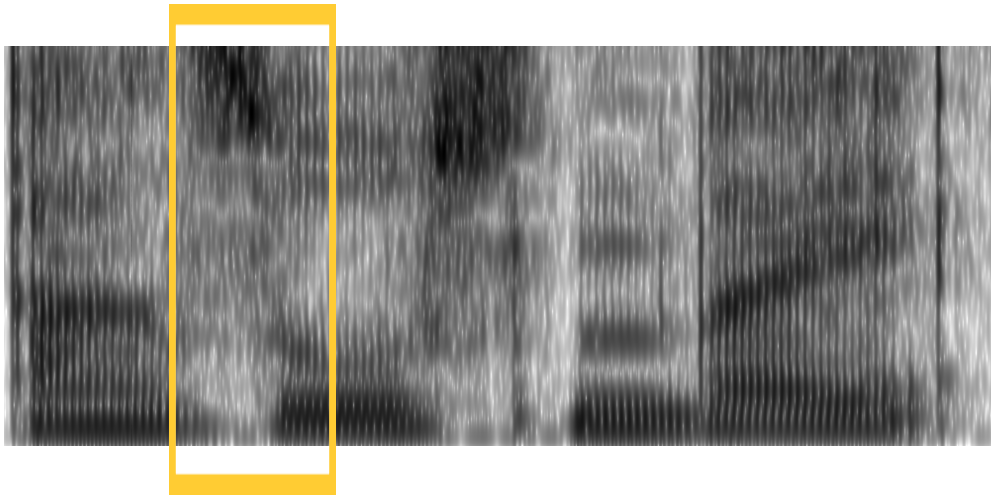
Moscow always has traffic jams.



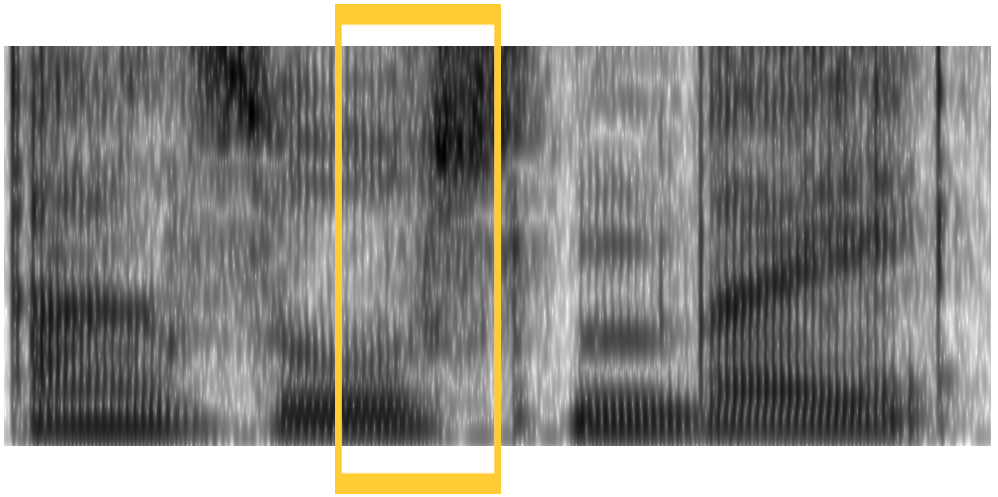
Moscow always has traffic jams.



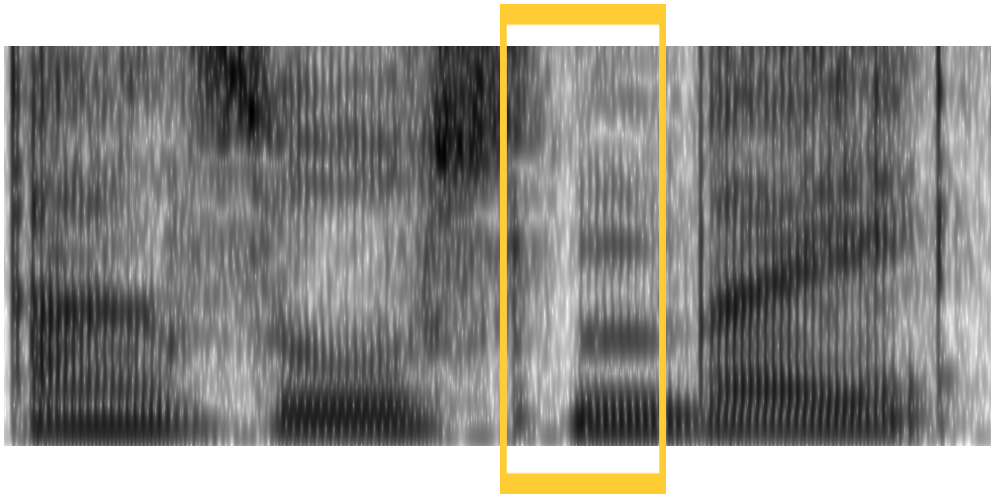
Moscow always has traffic jams.



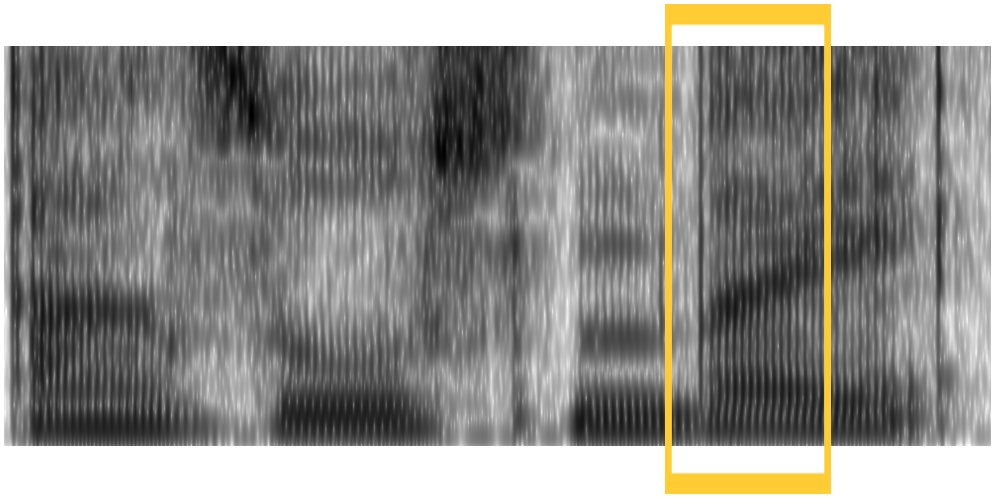
Moscow always has traffic jams.



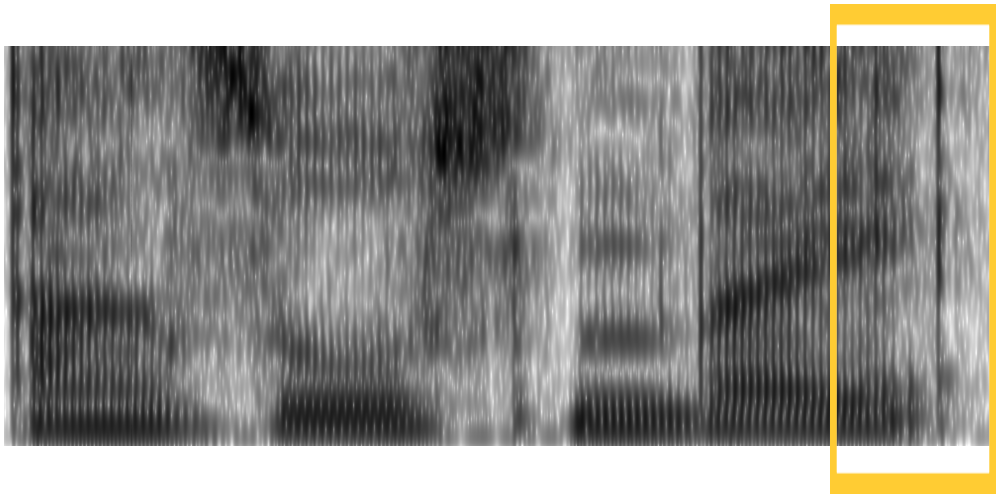
Moscow always has traffic jams.



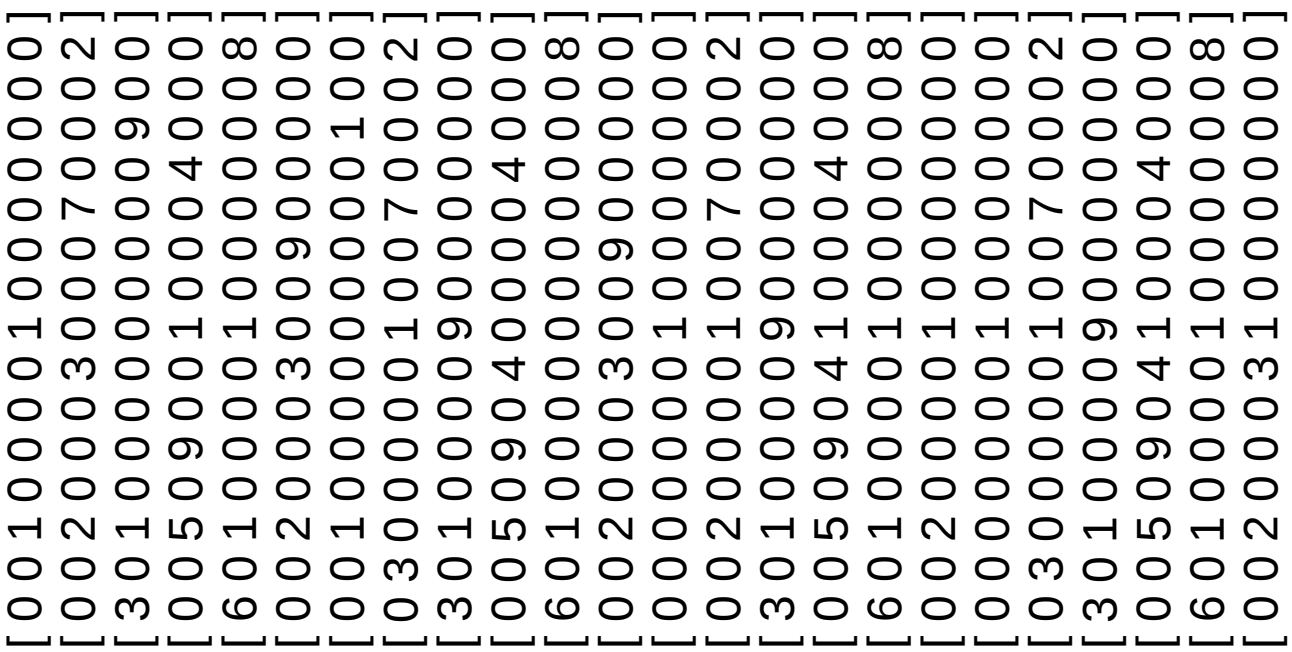
Moscow always has traffic jams.

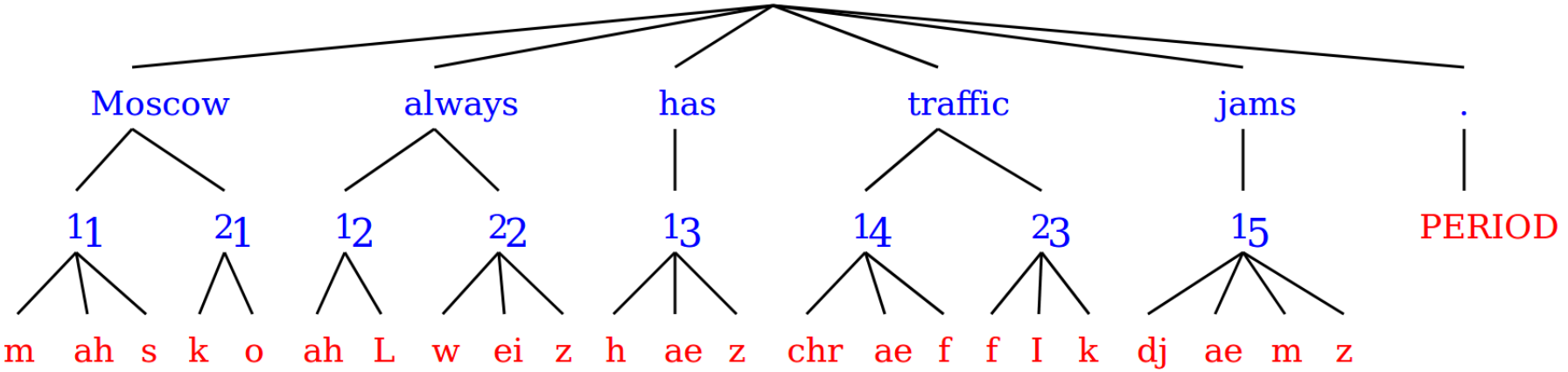


Moscow always has traffic jams.



Moscow always has traffic jams.




Moscow
always
has
traffic
jams
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11
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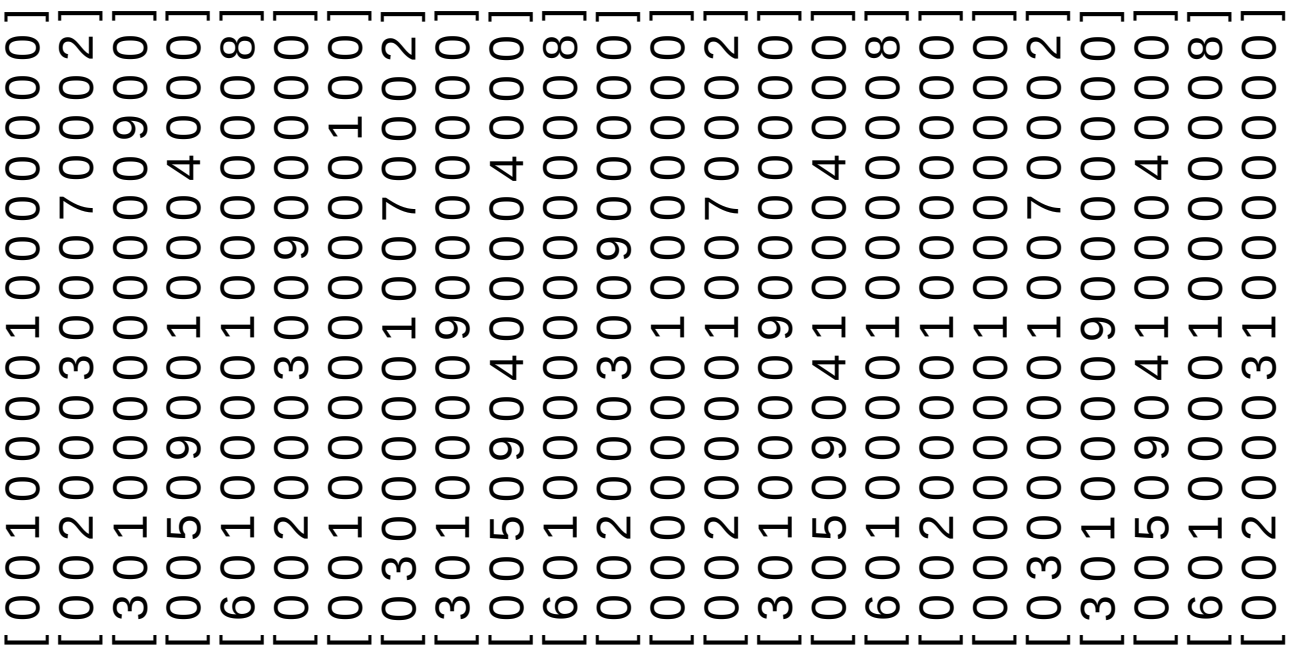
15
PERIOD
m ah s k o ah L w ei z h ae z chr ae f f I k dj ae m z



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18:1/19:9/20:2/21:1/22:1/23:78/24:9/25:1/26:79/27:9/28:1/29:0.630101876438/30:0.6851
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i+/0:_NA_/1:sil/2:ah/3:f/4:y/5:0/6:8/7:4/8:1/9:8/10:0/11:9/12:0/13:0/14:76/15:0/16:1/17:76/
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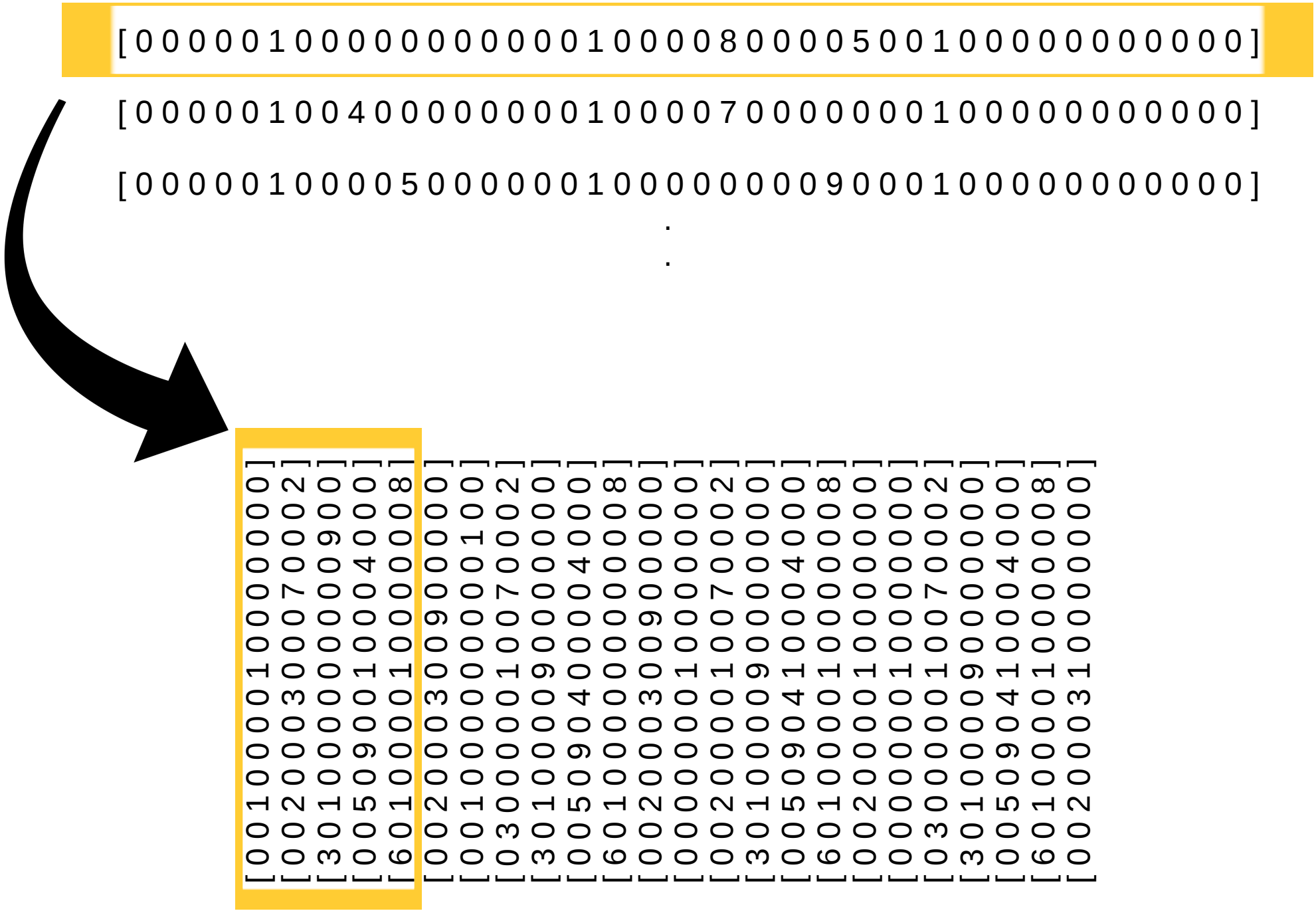
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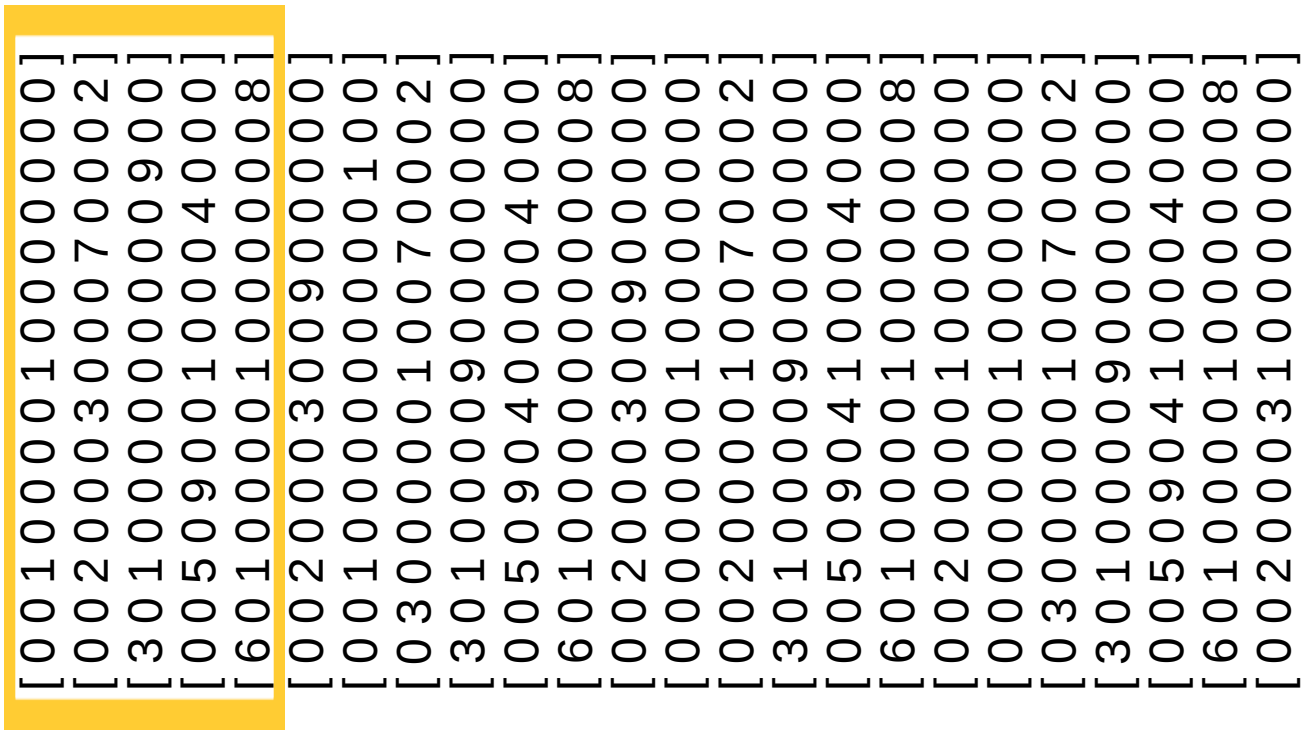
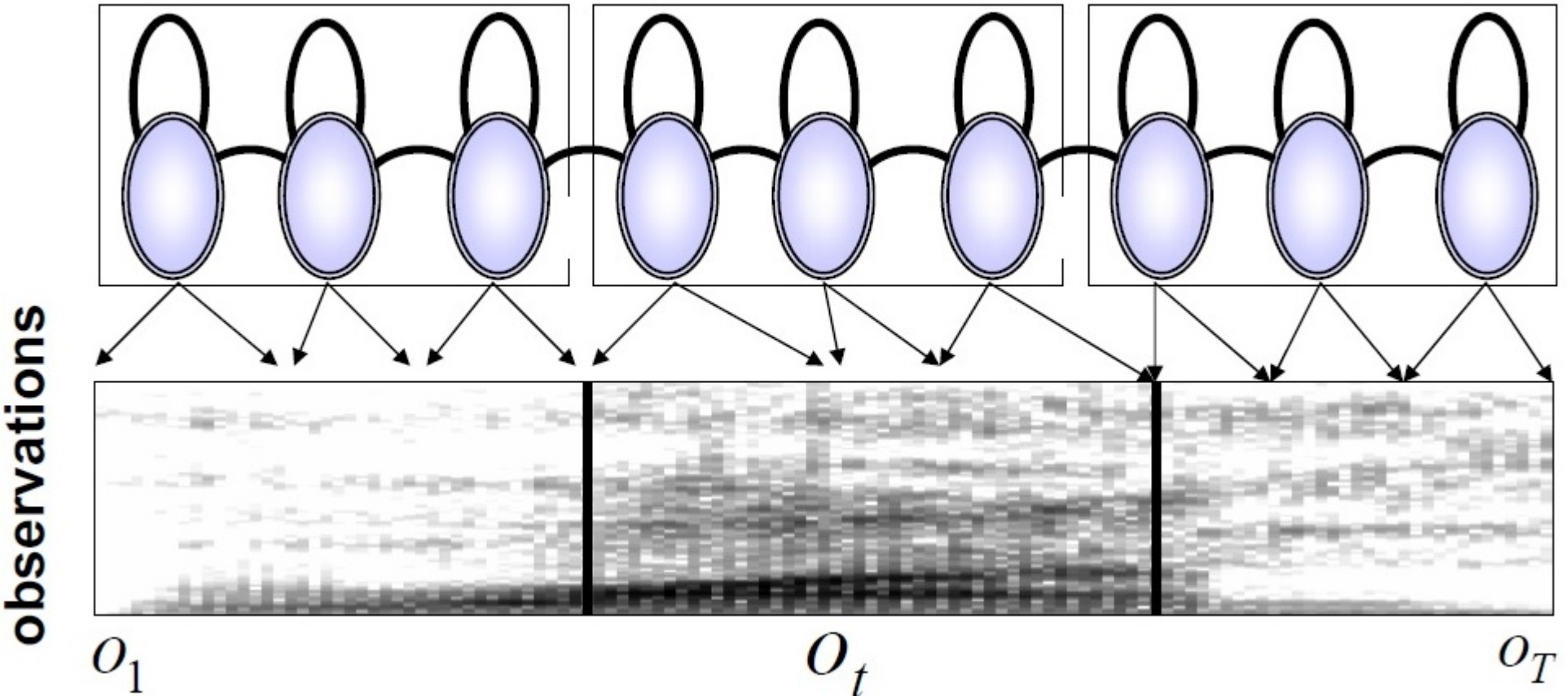
HTK ALIGNMENT





<vsooda.github.io>

WORD →

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PHONEME →
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PHONEME →
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PHONEME →
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PHONEME →
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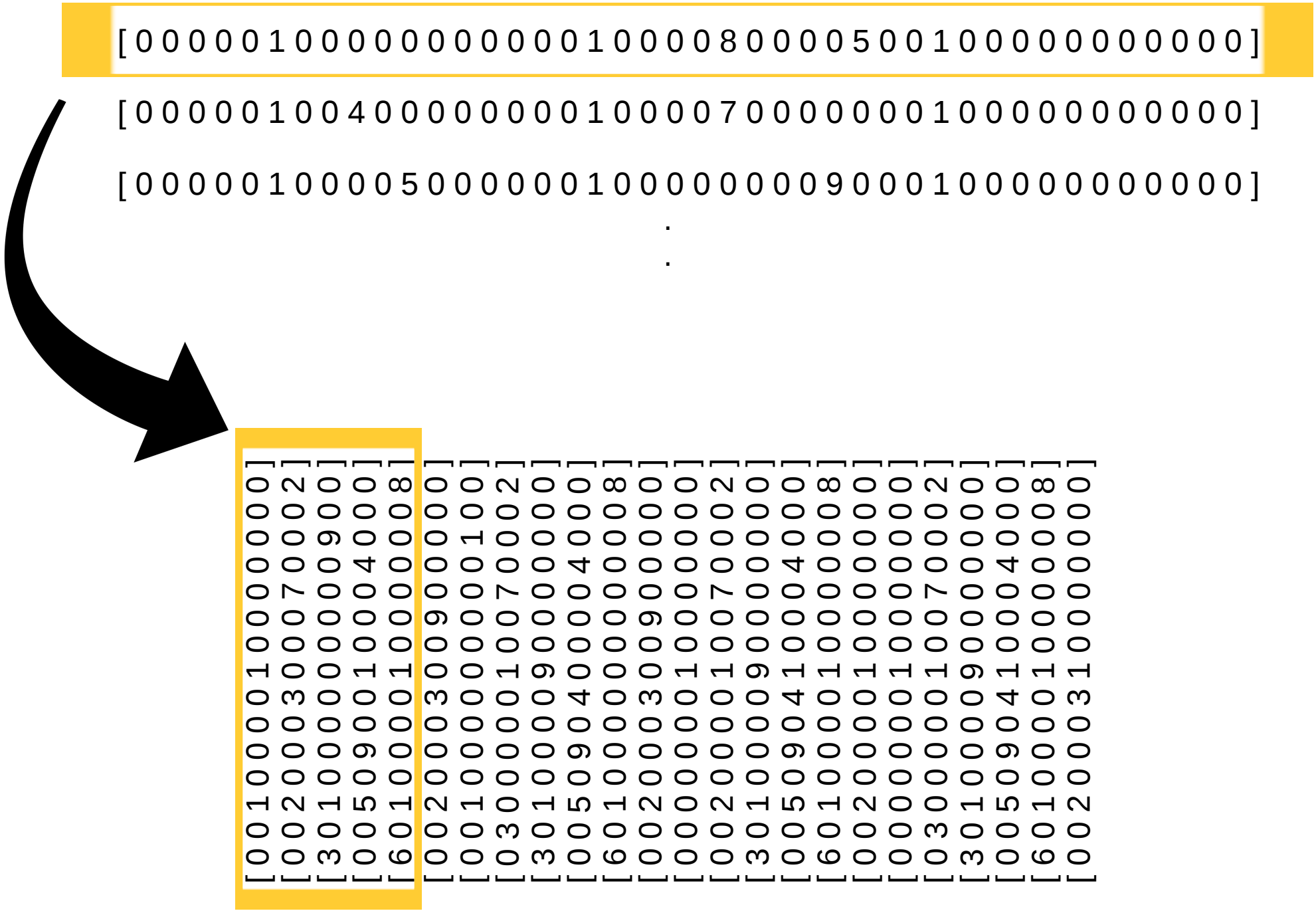
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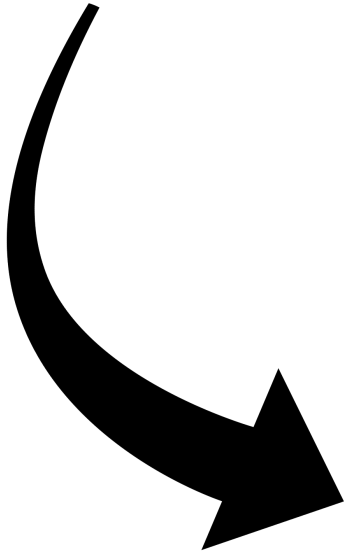

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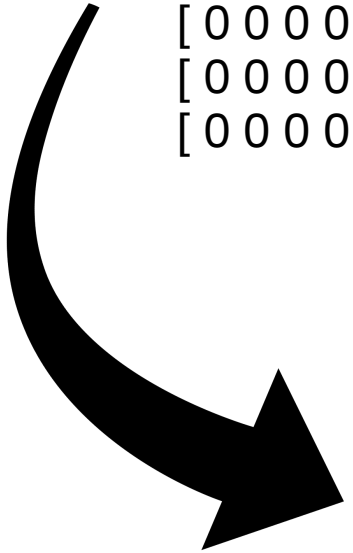

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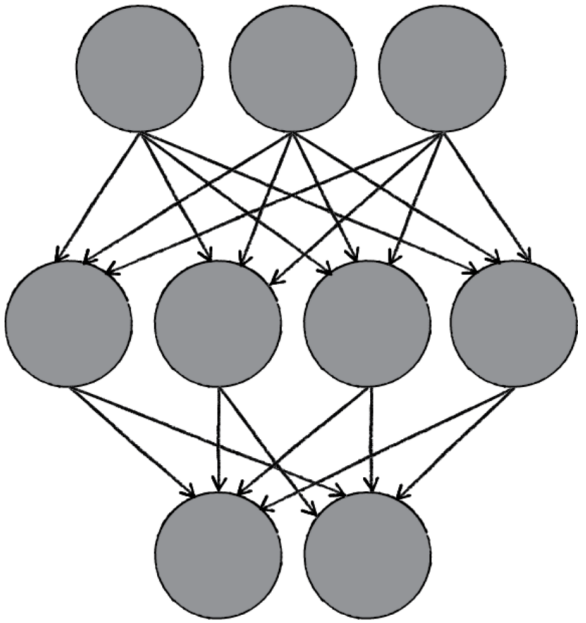

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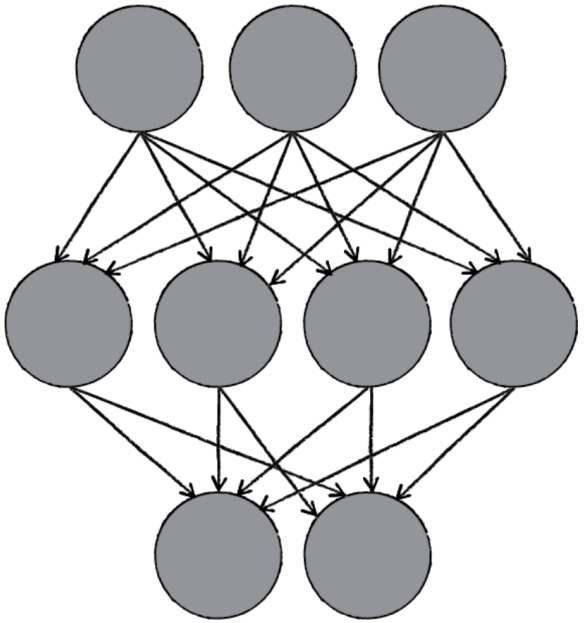

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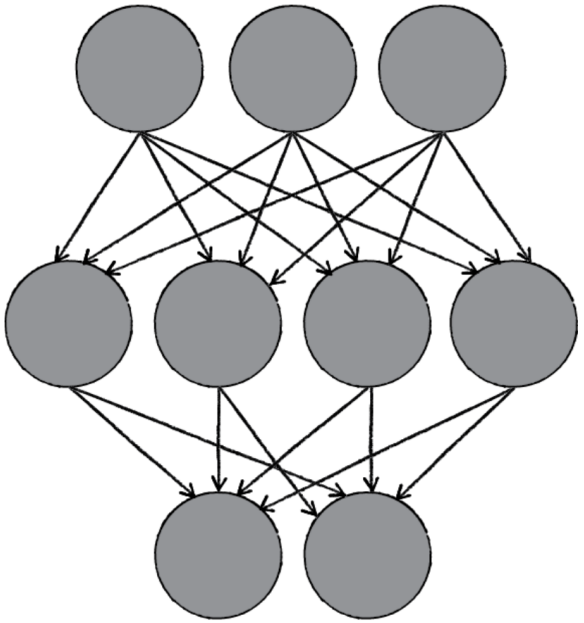

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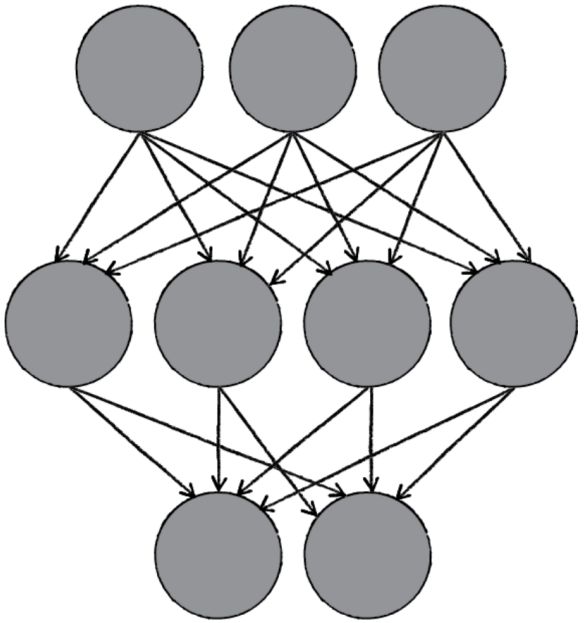

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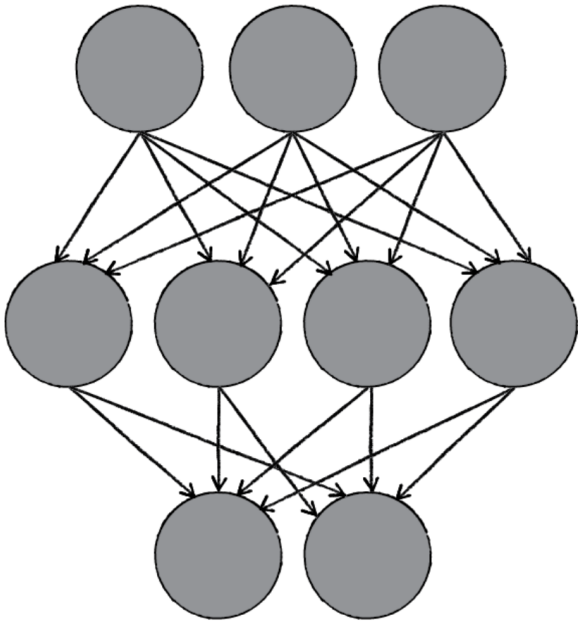

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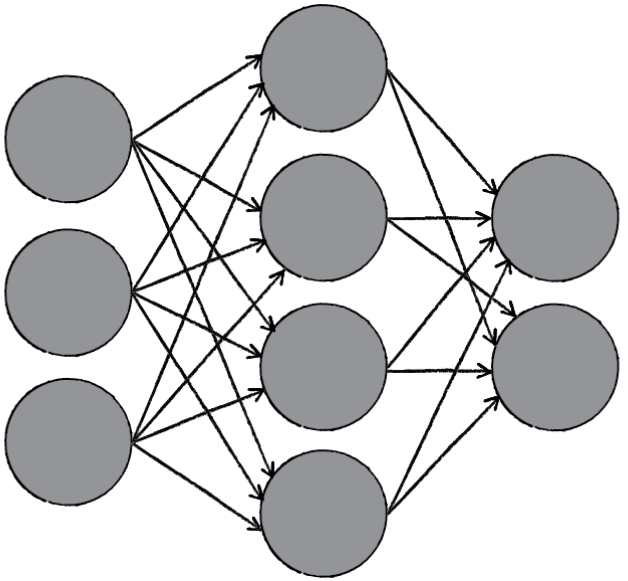
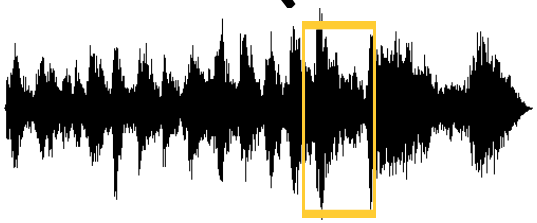
Moscow always has
traffic jams.





References / Resources

- CSTR slides: speech.zone
- Ossian: github.com/CSTR-Edinburgh/Ossian
- Merlin: github.com/CSTR-Edinburgh