



ИЗ АУДИО В НОТЫ

НЕЗАКОНЧЕННАЯ ПОПЫТКА



фортепиано

аниме

НОТЫ

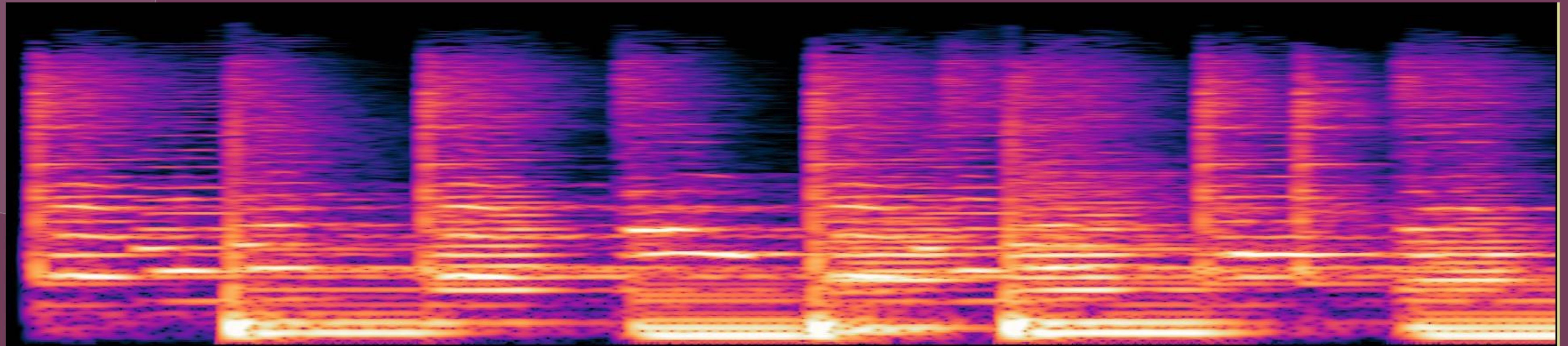
дело было так...

гугл

разочарование

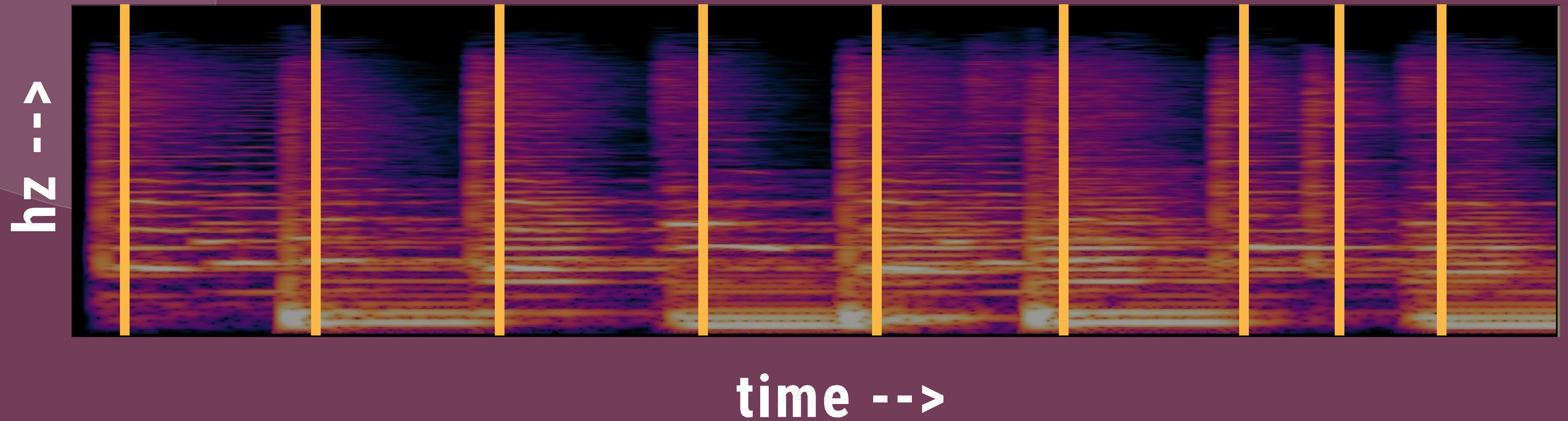
лень

первое наблюдение

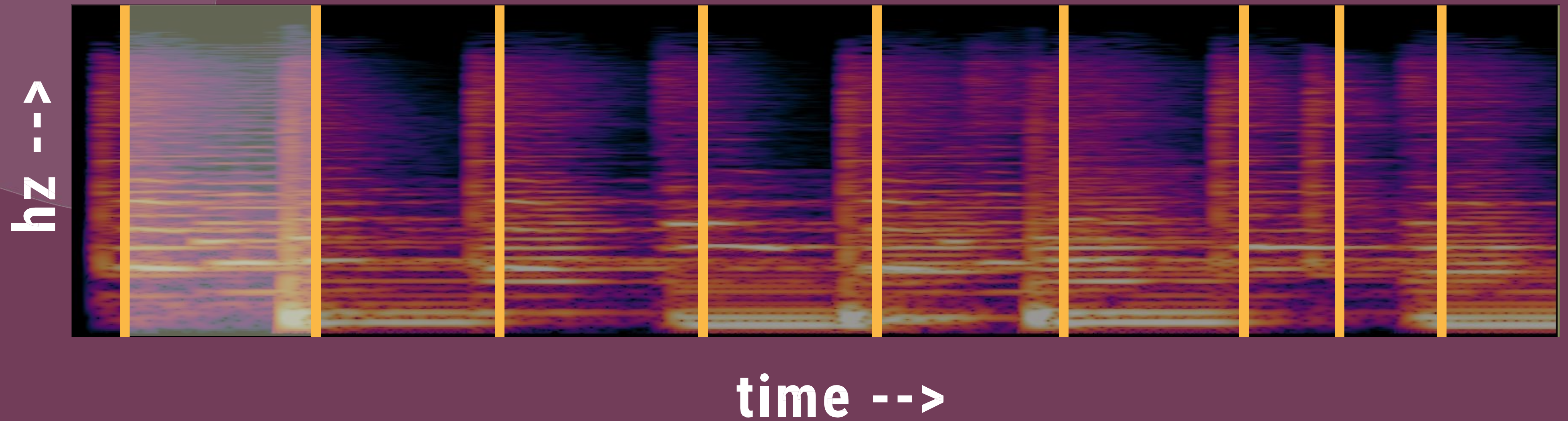


time -->

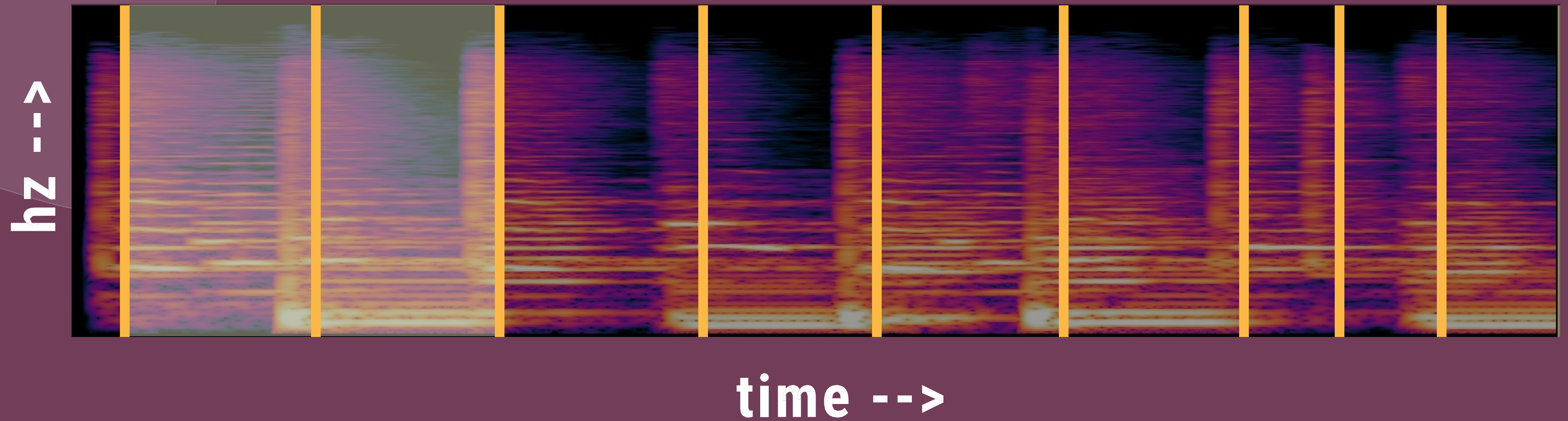
первое наблюдение



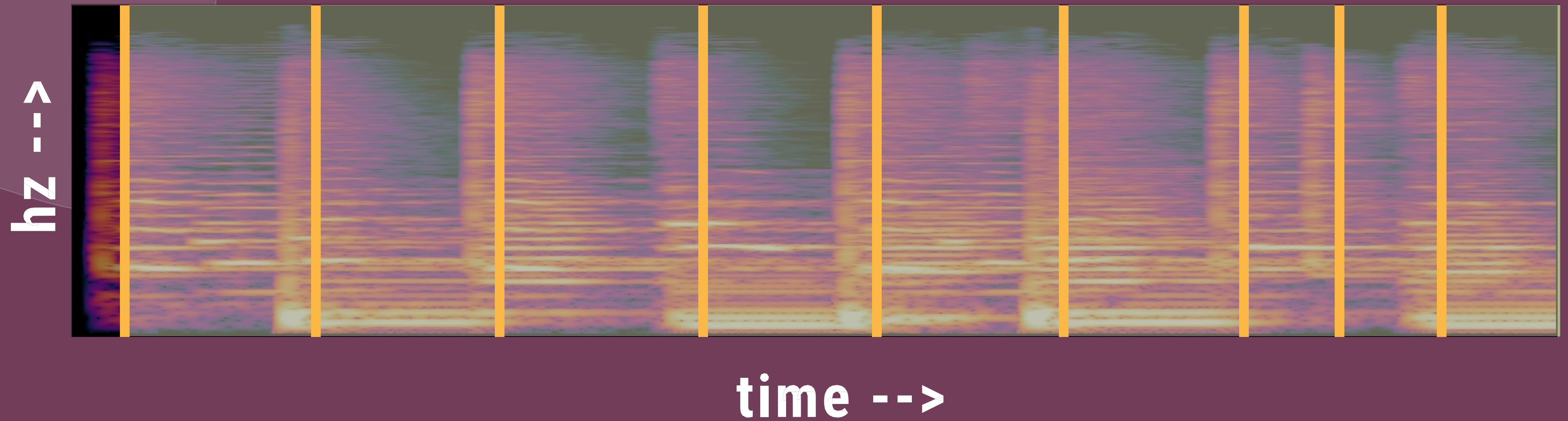
первое наблюдение



первое наблюдение



первое наблюдение

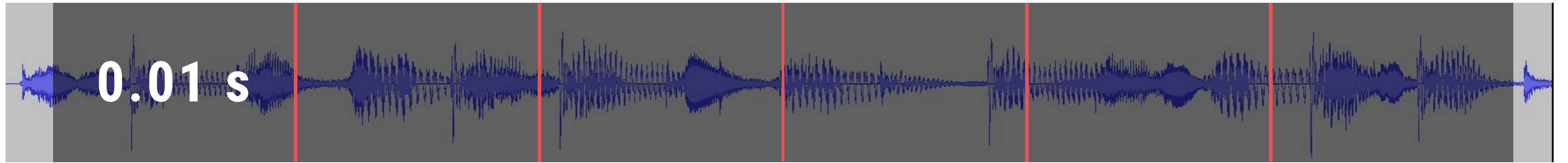


audio pipeline

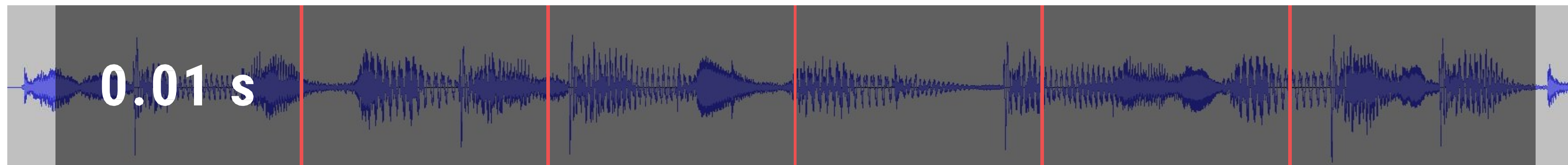
- 1) подготовка аудио
- 2) обнаружение звукового события
- 3) вычисление частоты
- 4) вычисления midi номера
- 5) генерация нот
- 6) midi файл с нотами на выход



АЛГОРИТМ

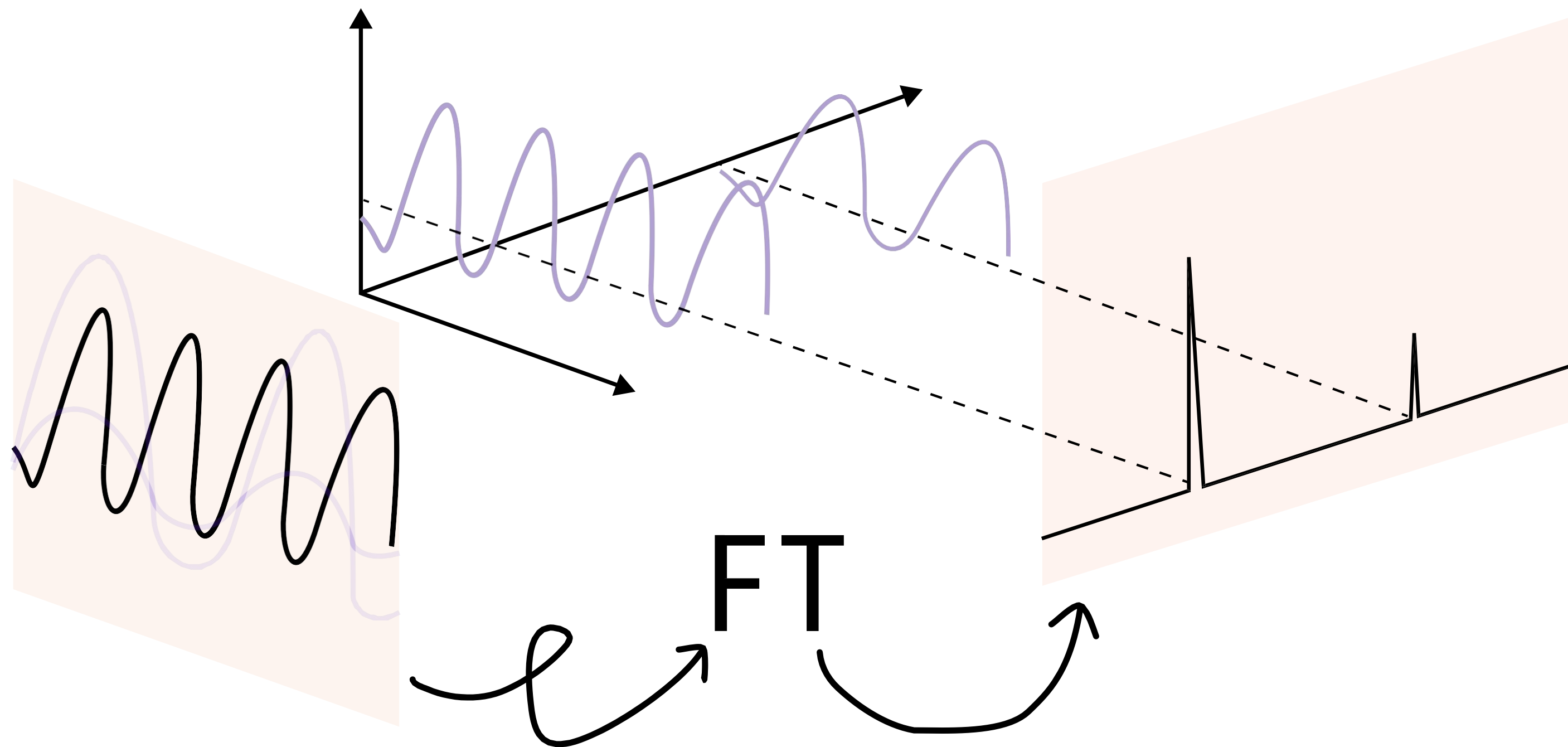


АЛГОРИТМ

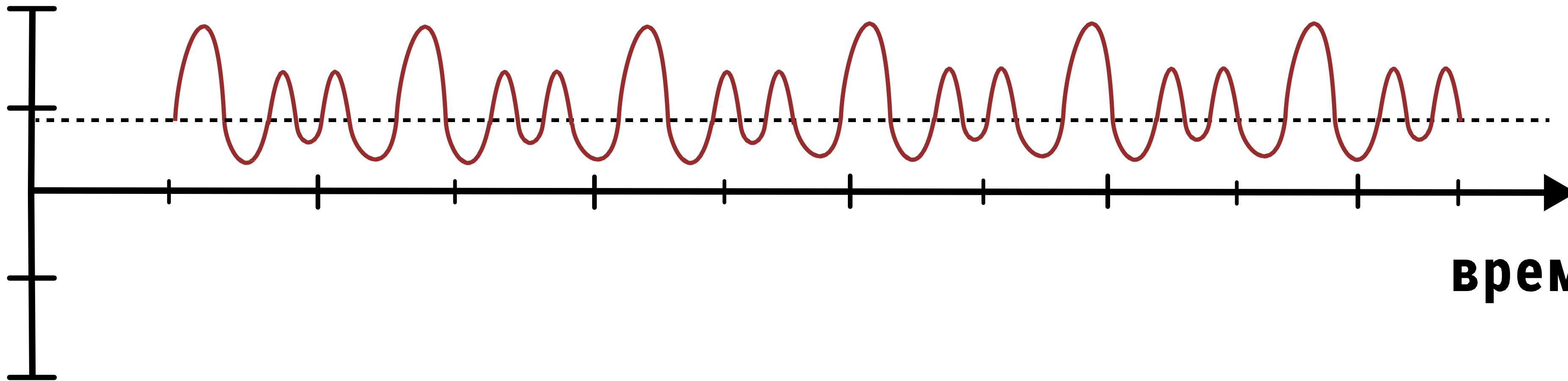


БПФ

FOURIER TRANSFORM

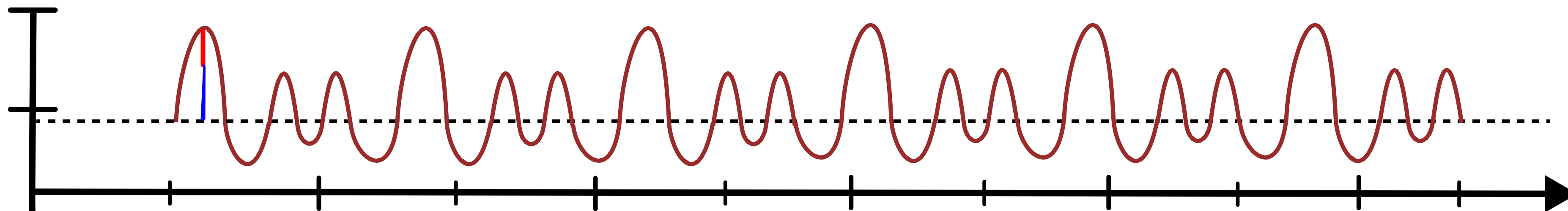


амплитуда



время

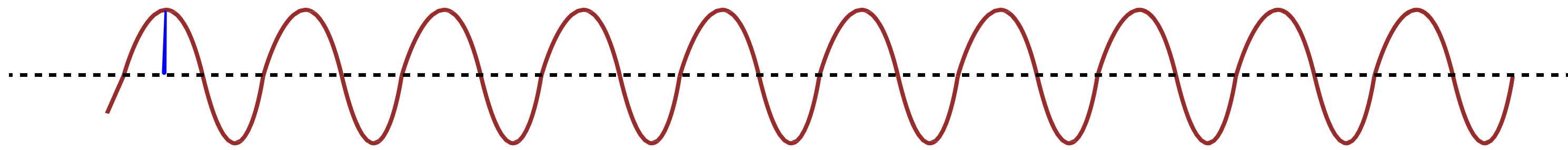
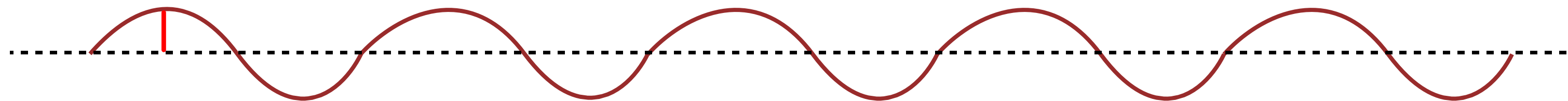
амплитуда



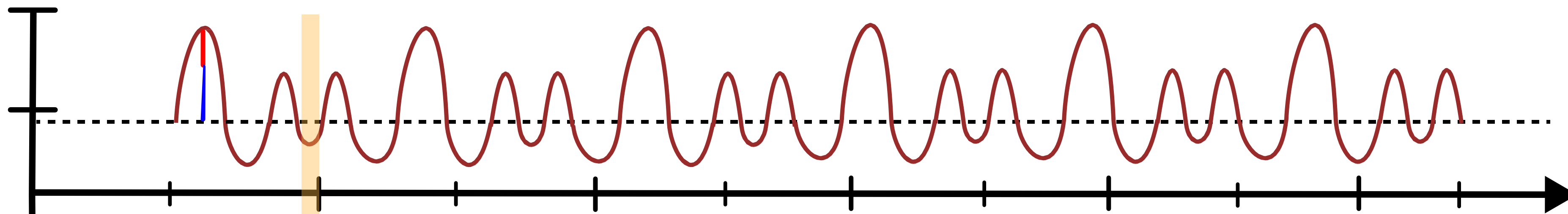
время

||

+



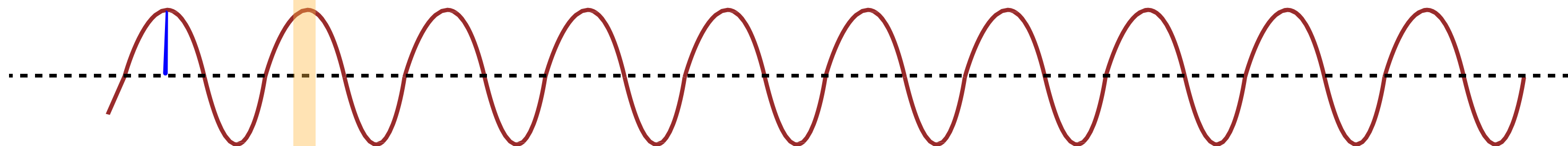
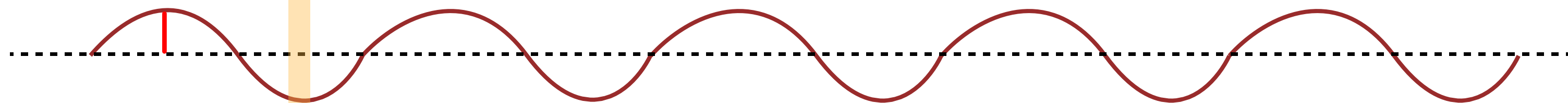
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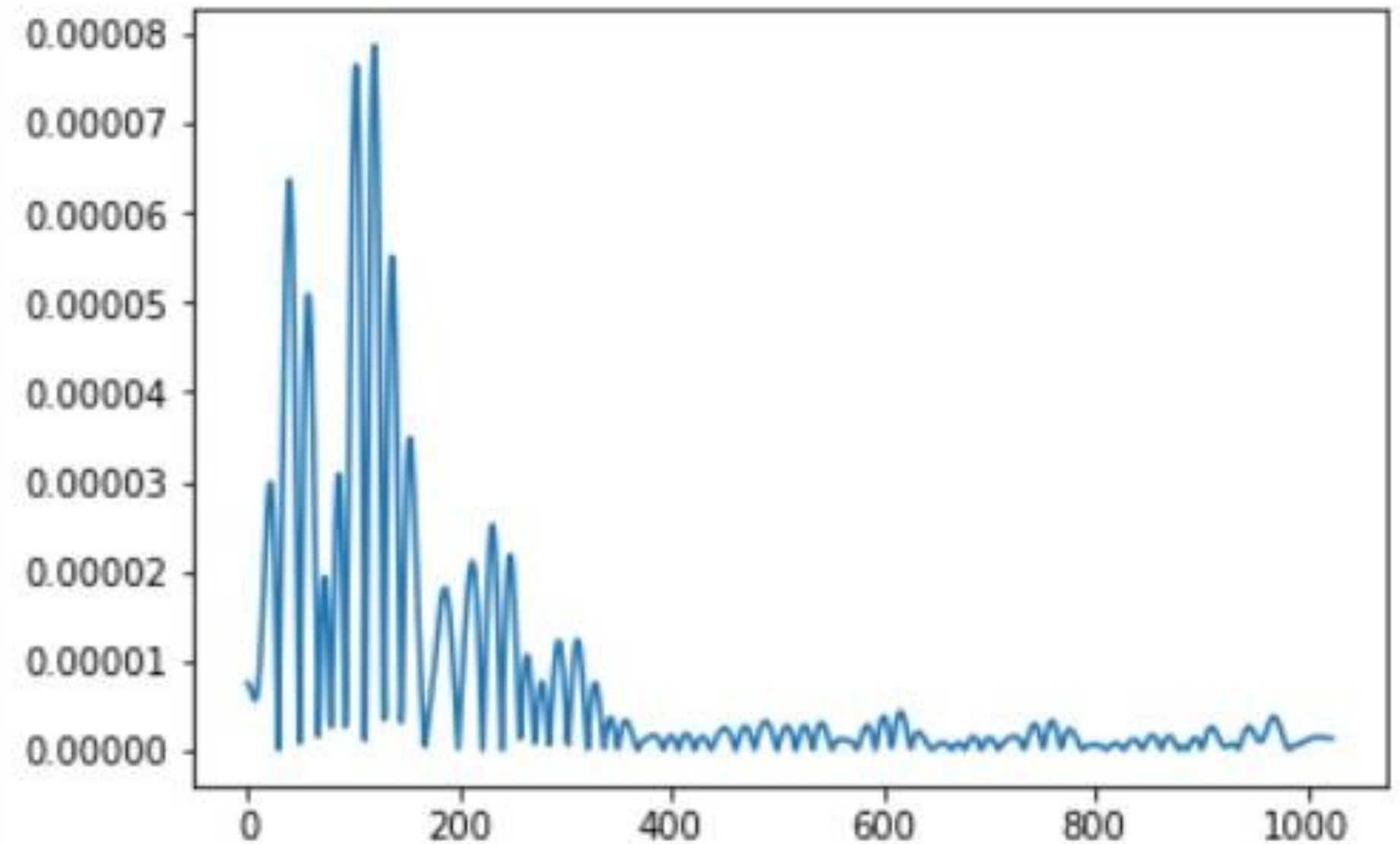
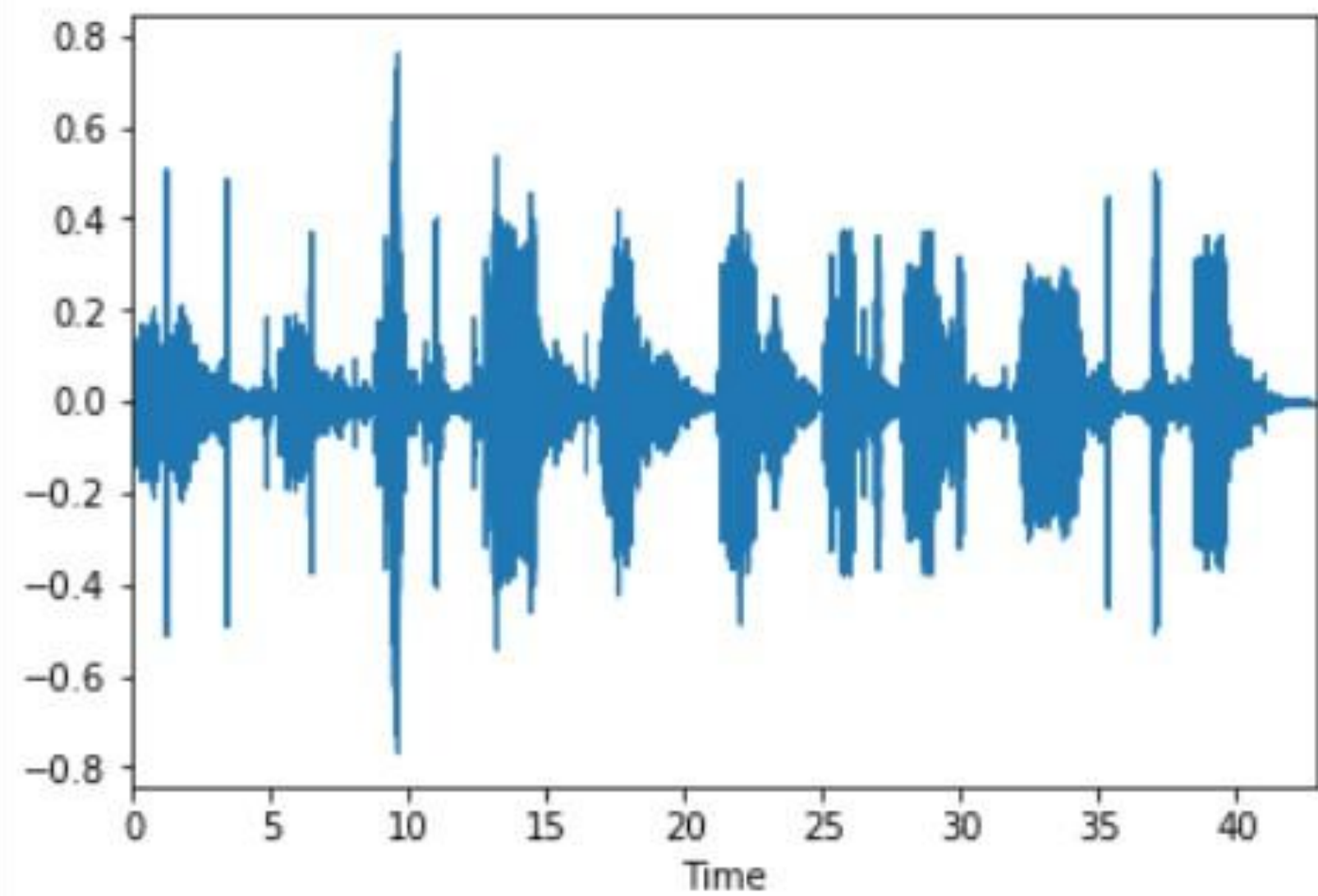
время

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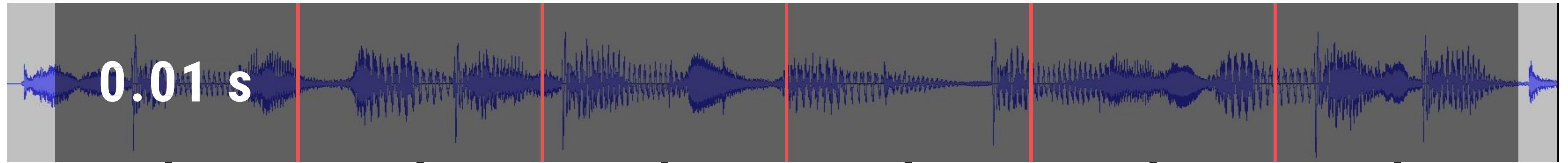
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FFT -->



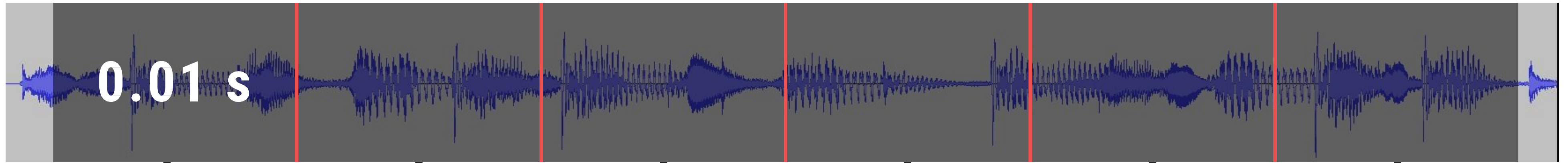
АЛГОРИТМ



БПФ

массив средней частоты окон

АЛГОРИТМ



БПФ

массив средней частоты окон

пороговая функция

ЧАСТОТА В MIDI НОМЕР

$$m = 69 + \log_2 \frac{f}{440 \text{ Hz}}$$

РЕЗУЛЬТАТ АЛГОРИТМА

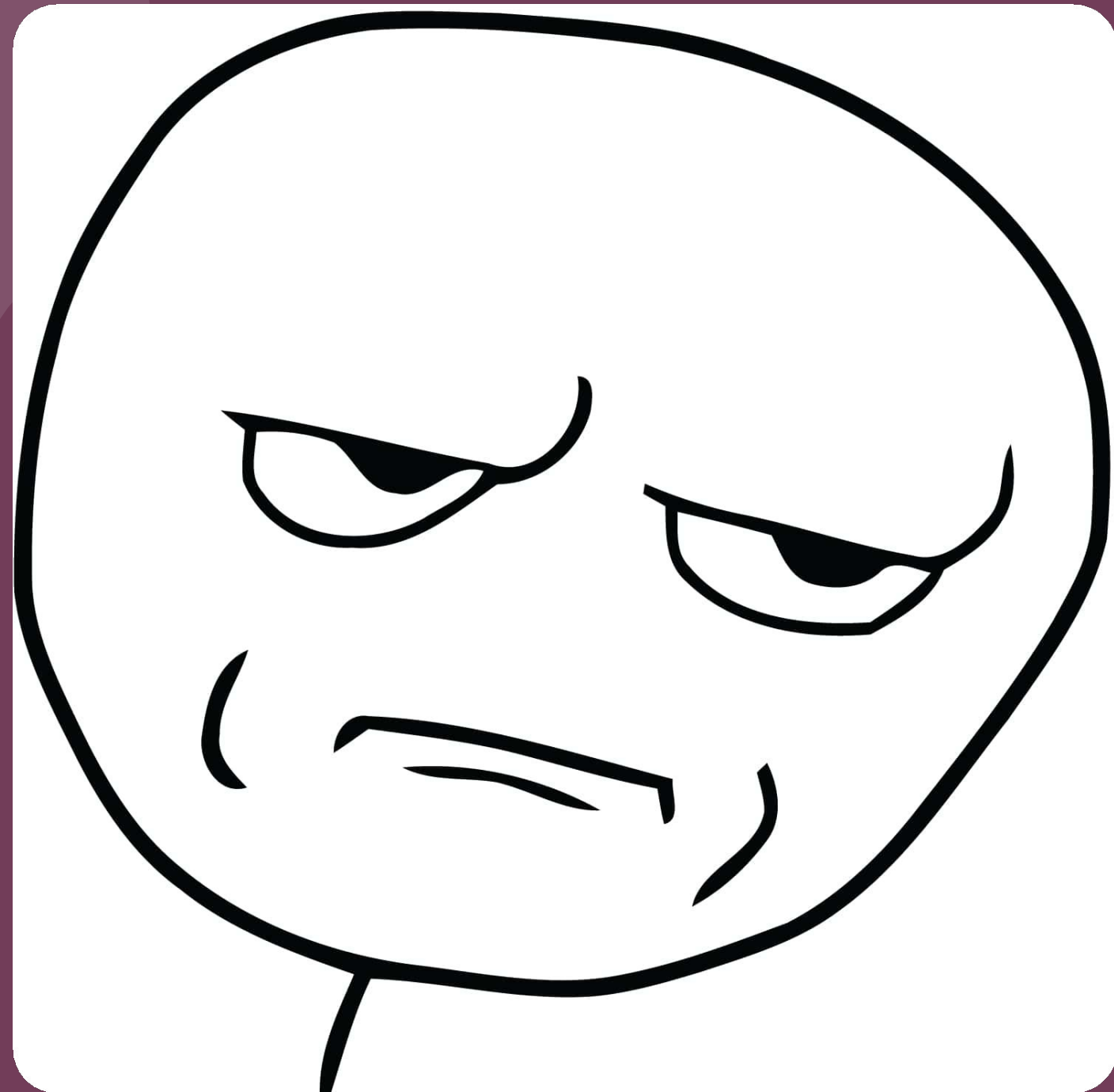
The image displays a digital piano software interface. At the top, the title "РЕЗУЛЬТАТ АЛГОРИТМА" is prominently displayed. Below it, the software interface is visible, featuring a track named "Track 1" with an "Acoustic Grand Piano" instrument. The interface includes a piano roll and a MIDI piano editor.

The piano roll shows a sequence of notes in 4/4 time, spanning measures 0 to 3. The notes are represented by blue horizontal bars, indicating their duration and pitch. The piano roll is divided into measures, with measure numbers 0, 1, 2, and 3 visible. The piano roll also shows a keyboard layout on the left side, with notes C3, C4, and C5 labeled.

The MIDI piano editor below the piano roll shows various parameters for each note, including Velocity, Pitch Bend, Volume, Panpot, Expression, Hold Pedal, and Modulation. The Velocity parameter is shown as a vertical blue bar, with values ranging from 0 to 128. The other parameters are shown as horizontal bars, indicating their values over time.

The interface also includes a transport bar at the bottom, showing the current BPM (120) and the time signature (0001:01:000). The interface is dark-themed, with a blue color scheme for the piano roll and MIDI piano editor.

недостатки алгоритма



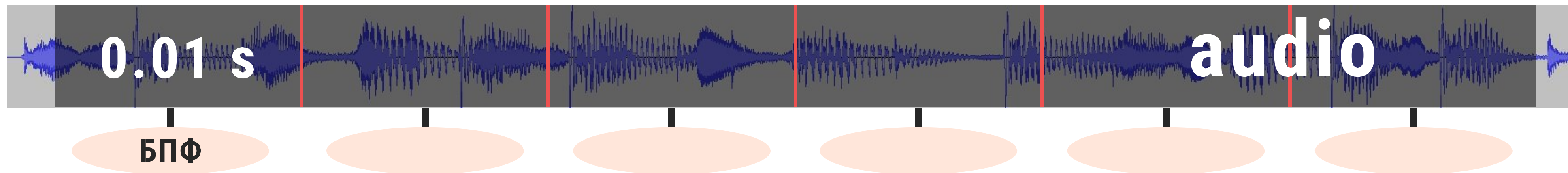
для разных данных разный

- размер окна

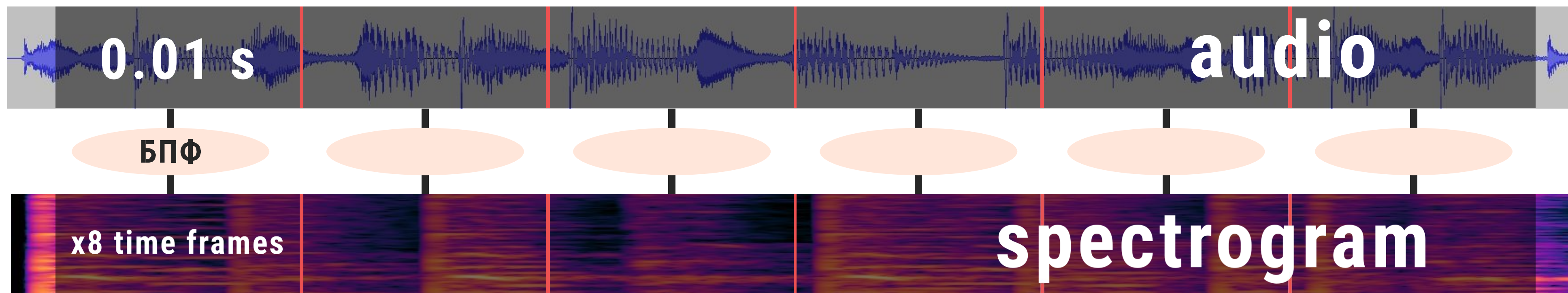
- порог начала звукового

события

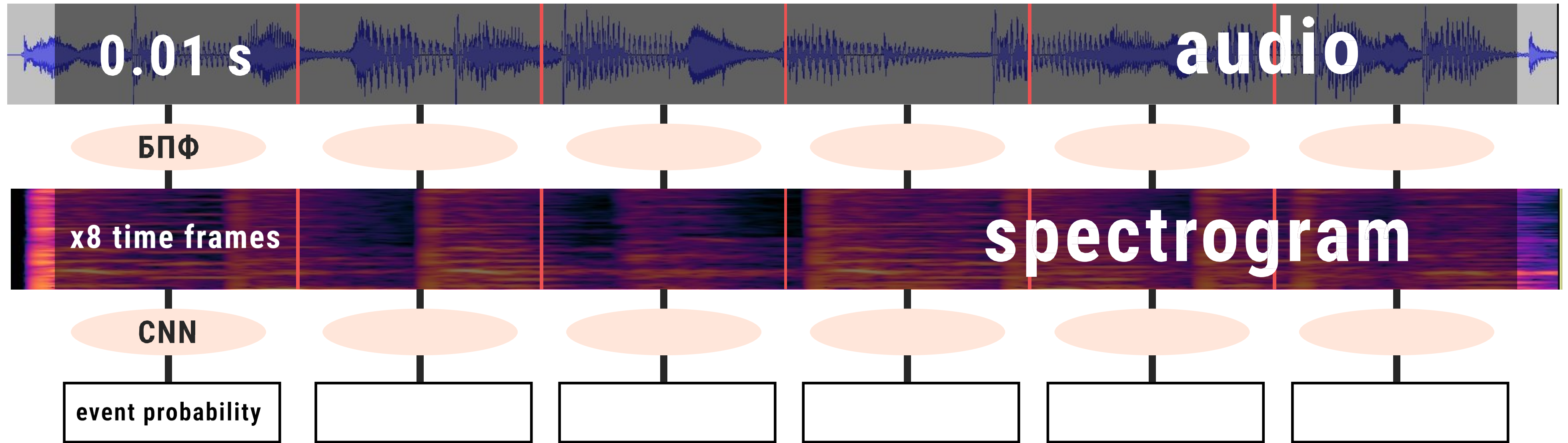
МАШИННОЕ ОБУЧЕНИЕ



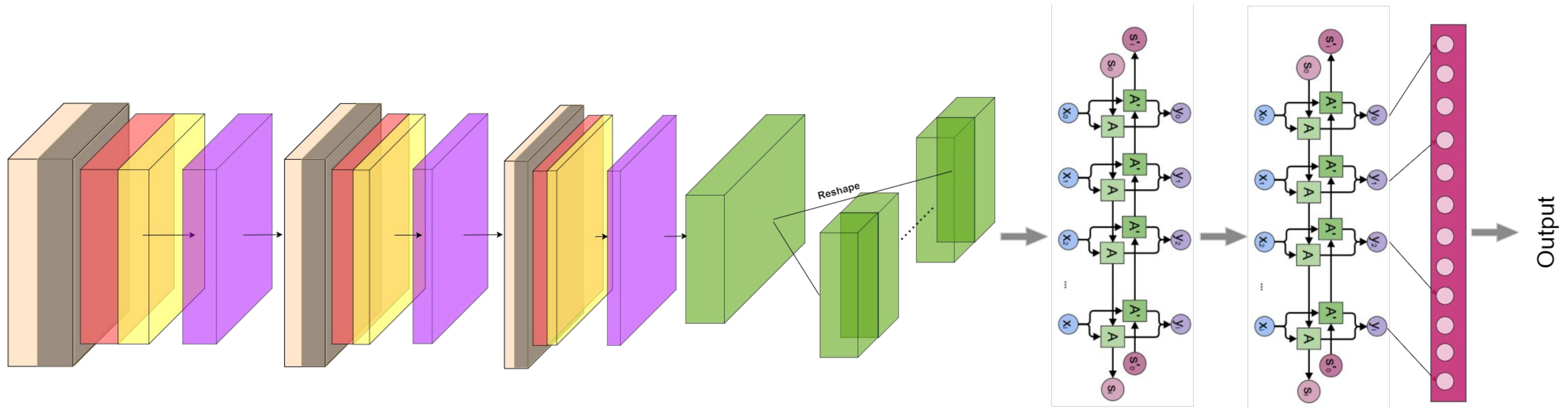
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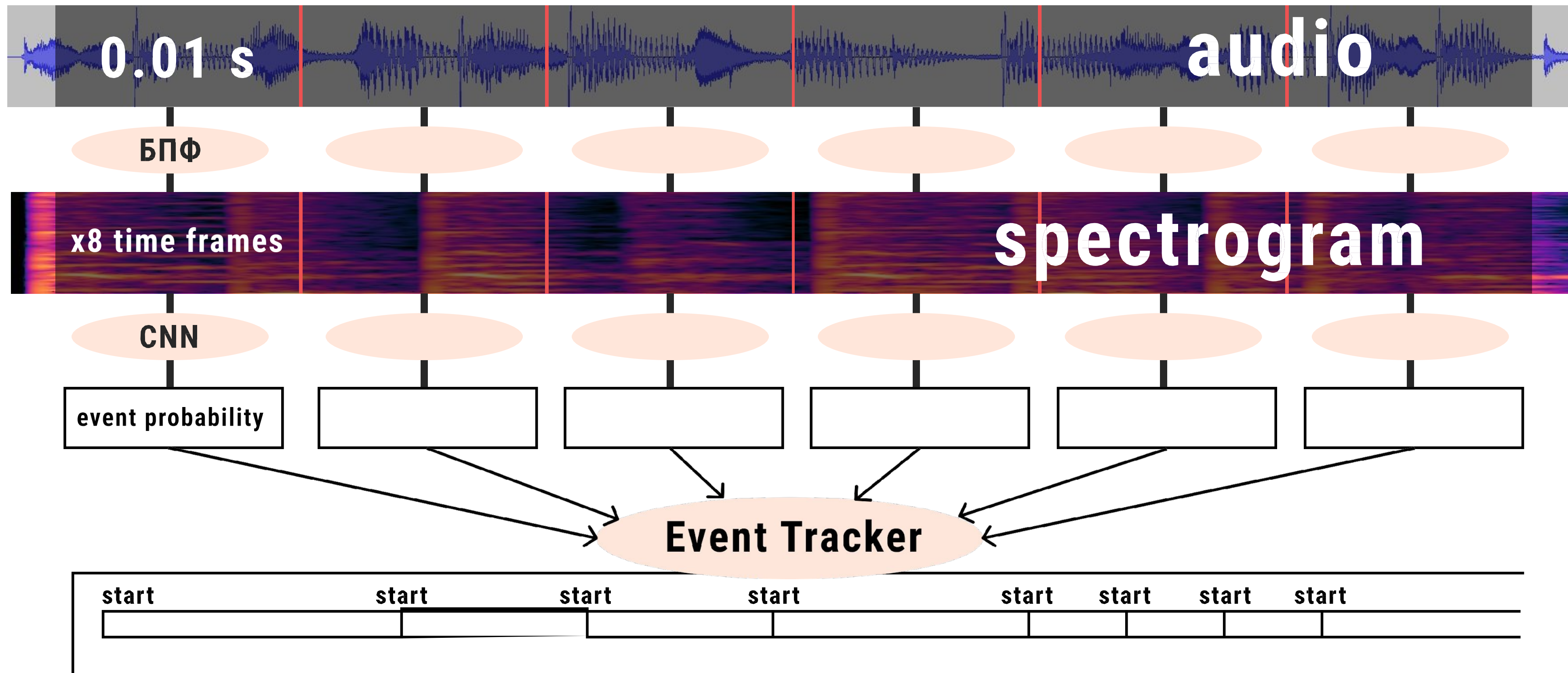
МАШИННОЕ ОБУЧЕНИЕ



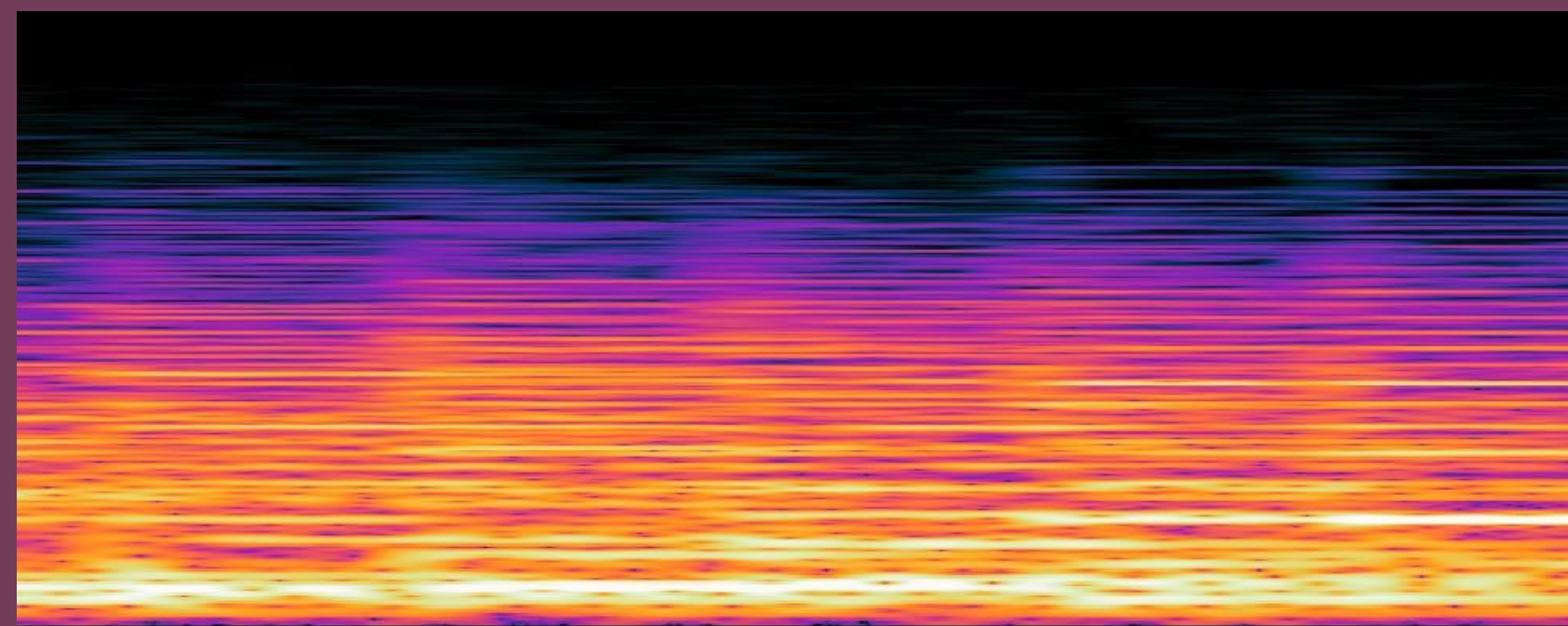
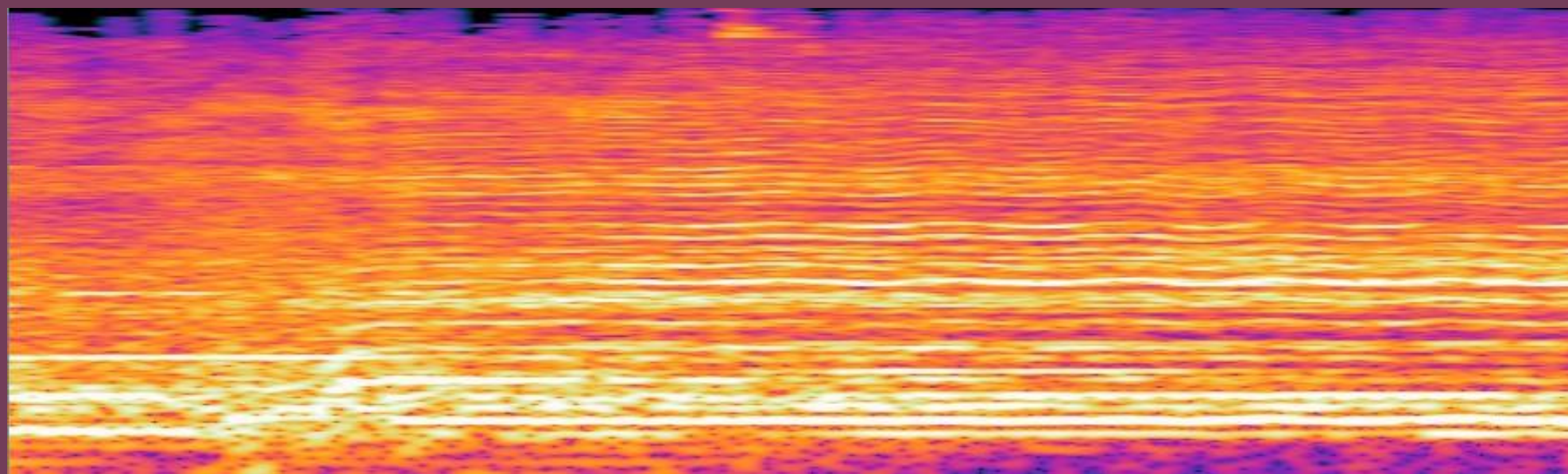
convolutional recurrent neural network



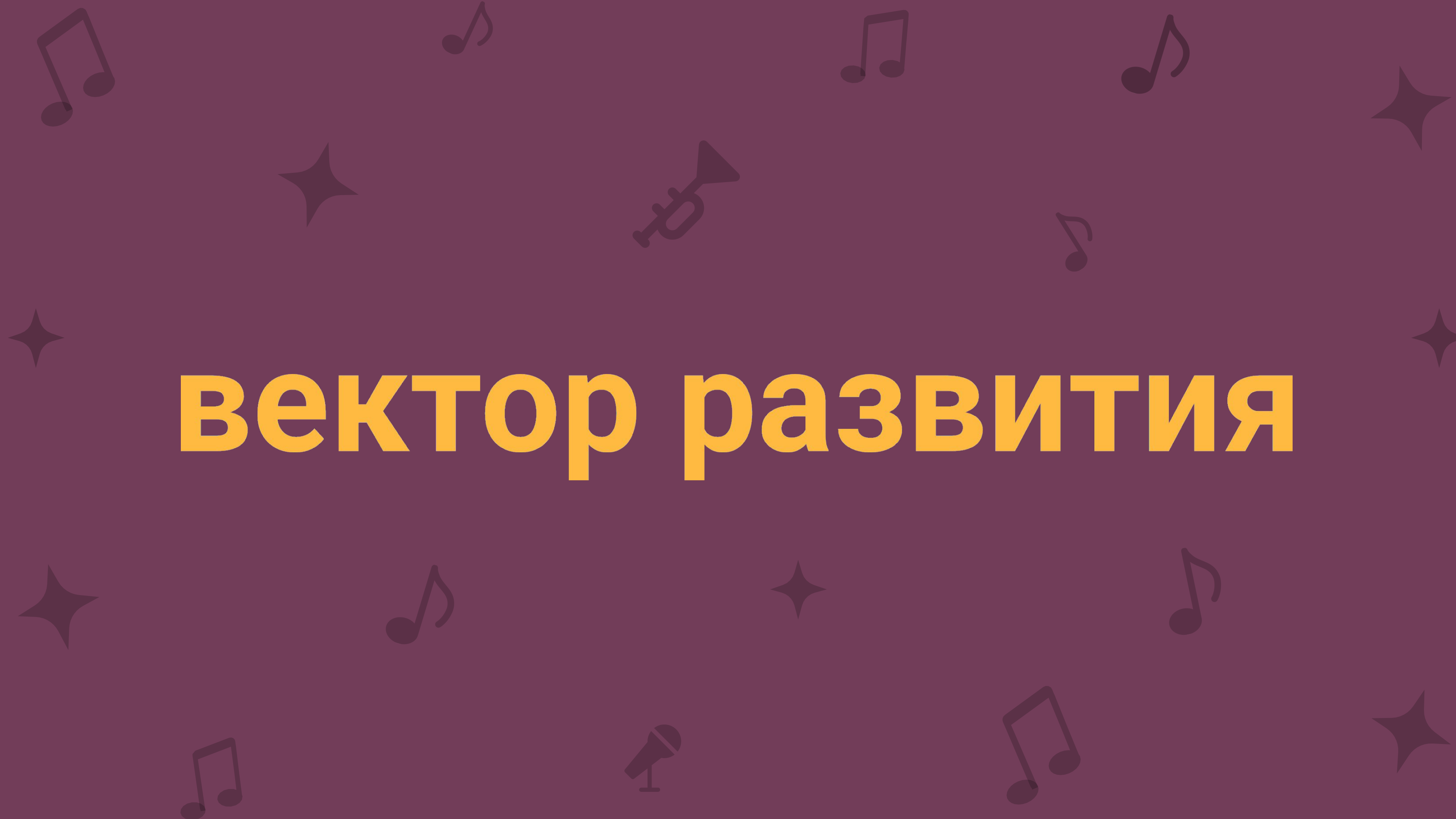
МАШИННОЕ ОБУЧЕНИЕ



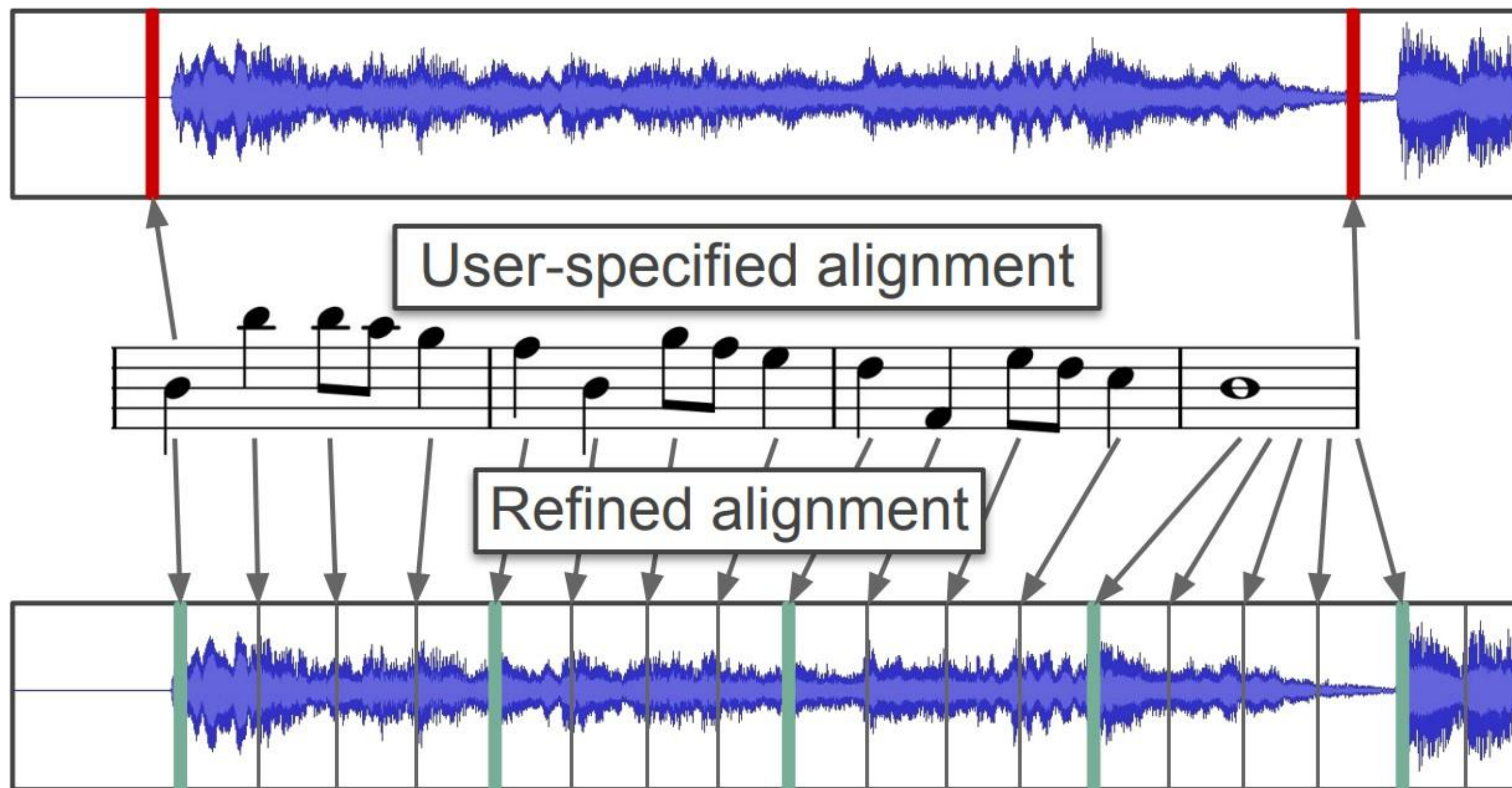
ЧТО ДЕЛАТЬ?

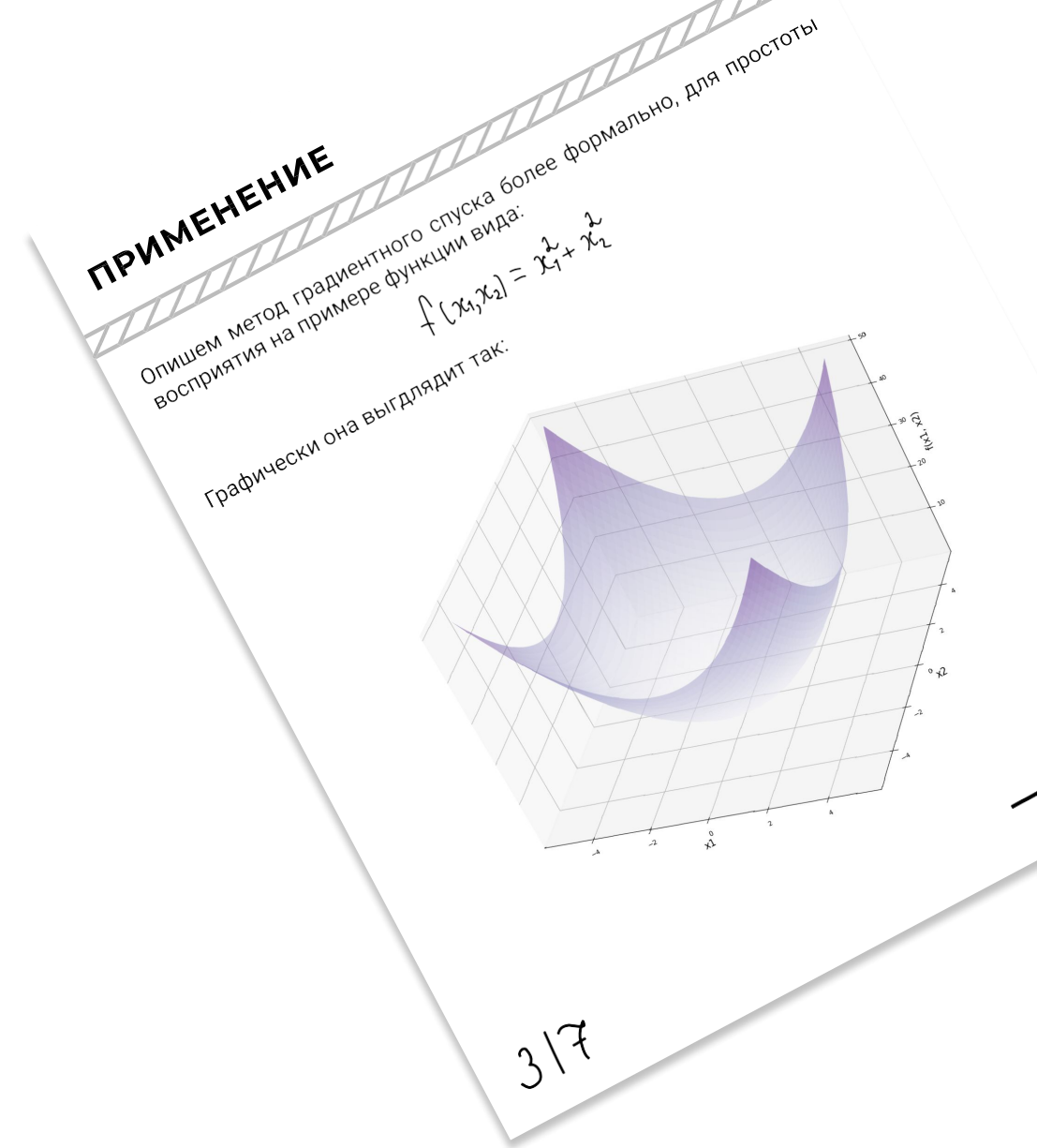
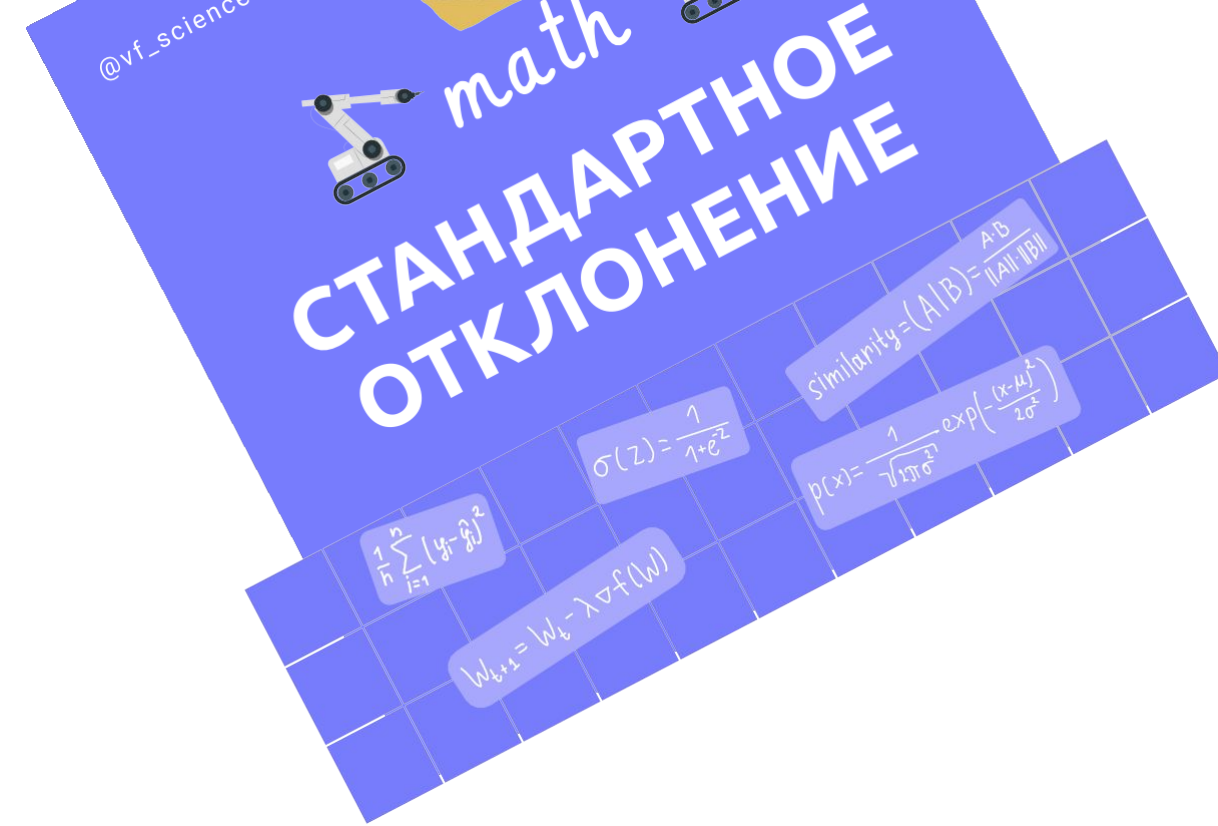


ВЕКТОР РАЗВИТИЯ



обучить генеративный трансформер





ведущий телеграм канал

