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TRANSFORMERS & REINFORCEMENT LEARNING ON 2048 GAME

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INTRODUCTION

In the last years the transformers architecture have revolutionized the field of the natural language processing(NPL) but in recent studies reveal that it could be used in other fields, for example in maths if you present a basic mathematical operation on GPT-like models it could returns the answer of the operation, in the same way it could translate texts to other languages giving as input the text an a little part of the translated text.

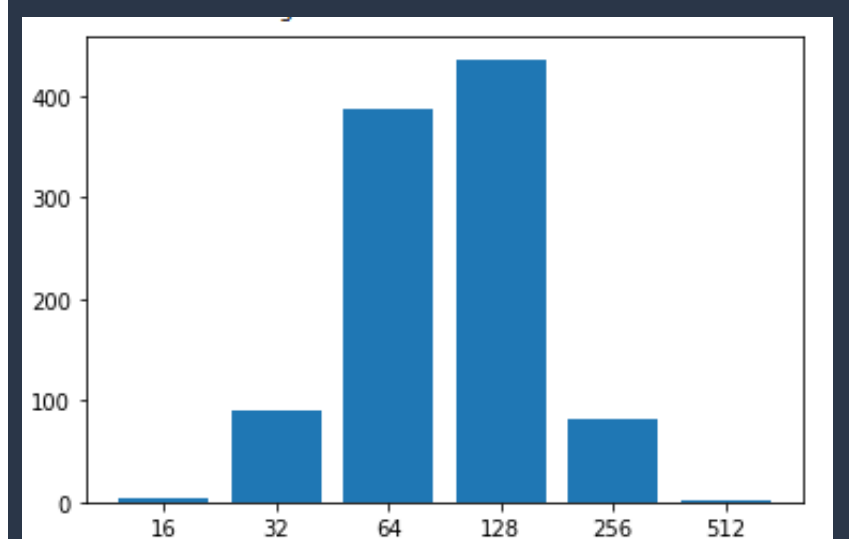So what happen if you try to solve a game with transformers.
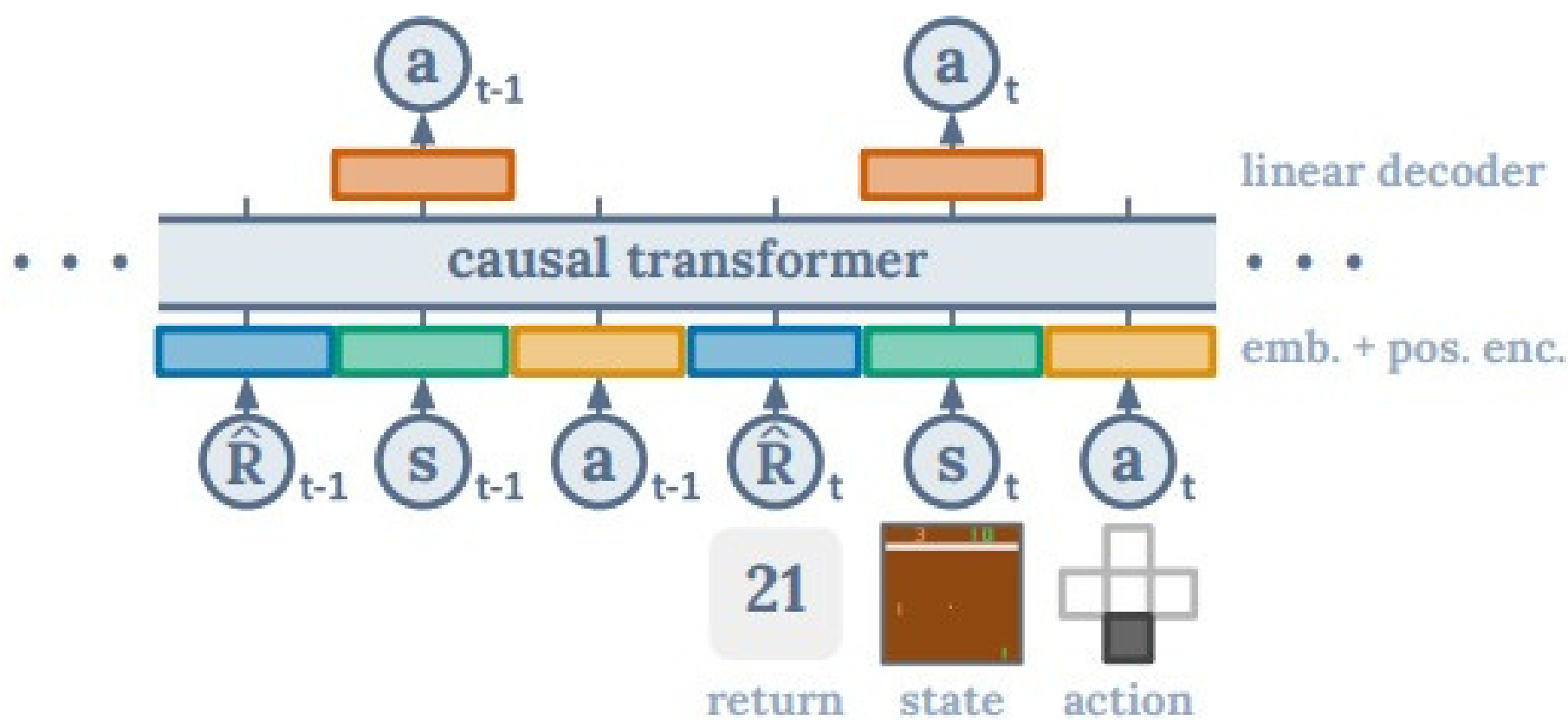
CONCLUSIONS

The transformers architecture works for the problem, but with some problems that tell us that was no designed for problems like these, but it could have a good performance anyway.

The architecture used wasn't able to reach the objective of a tile with 2048, but what it achieved in interesting, the first is that the number of miss movements were low, so we can find out that the transformer can learn some rules.

The biggest problem that we have was the memory of the GPU, that limit the batch of the number of past moves that it can learn, just 10 past moves, if it could use a multi GPU environment, like were GPT are trained we could increase it a lot the performance.
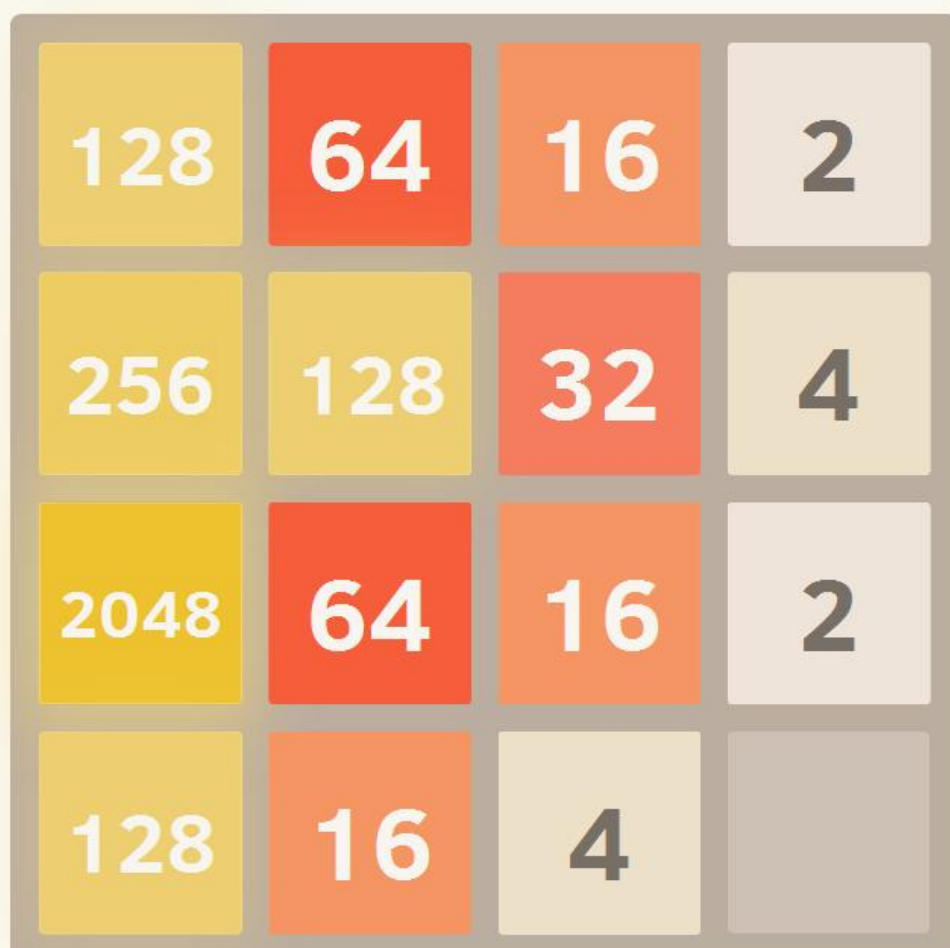

OFFLINE REINFORCEMENT LEARNING

Is the procedure of learn a policy which maximizes the expected return.
the main difference between online and offline RL, is that in online takes the data via environment interactions, meanwhile on offline RL, just have access to a limited data-set.

Video :
https://youtu.be/CJKKA4SMxdg