

# Dream a Fighting Game with Attention

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# Outline

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- Dream a game to play
- World Model
- You just need Attention
- Need to be Faster
- Challenge
- Schedule

# Dream a game to play

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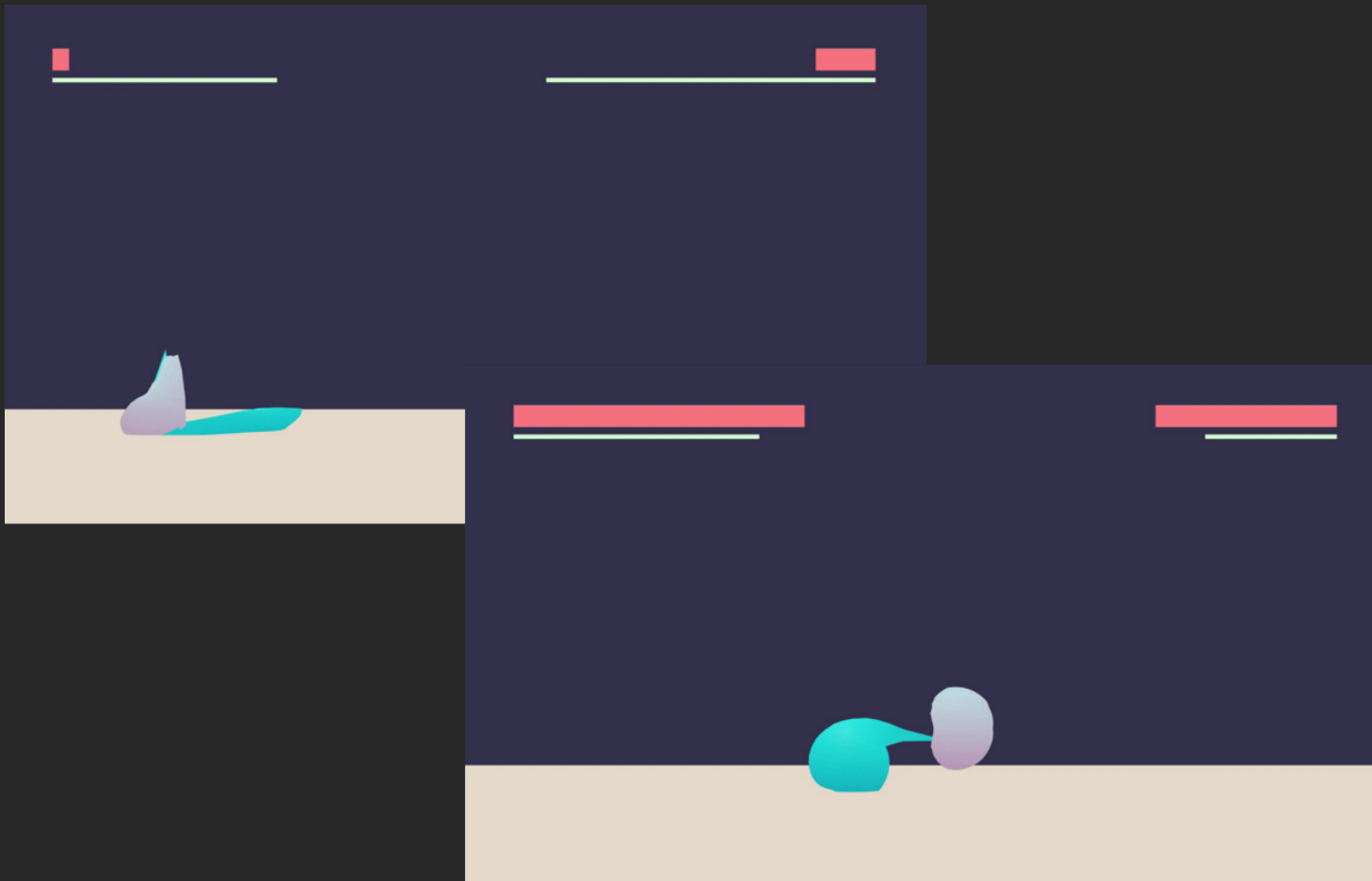
人類可以將玩過的遊戲在腦海中再現出來。  
運氣好的話還可以夢到自己在打電動。

那如果用類神經網路來重現這個能力不就等同，我可以用它來複製一份遊戲出來(危險發言)。  
而且這份複製出來的遊戲還能夠「跨平台」(重點)。

因此本次實驗將會使用類似 World Model 的結構，嘗試將無隨機系統的自製小型格鬥遊戲複製出來。

# Dream a game to play

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# World Model

At each time step, our agent receives an **observation** from the environment.

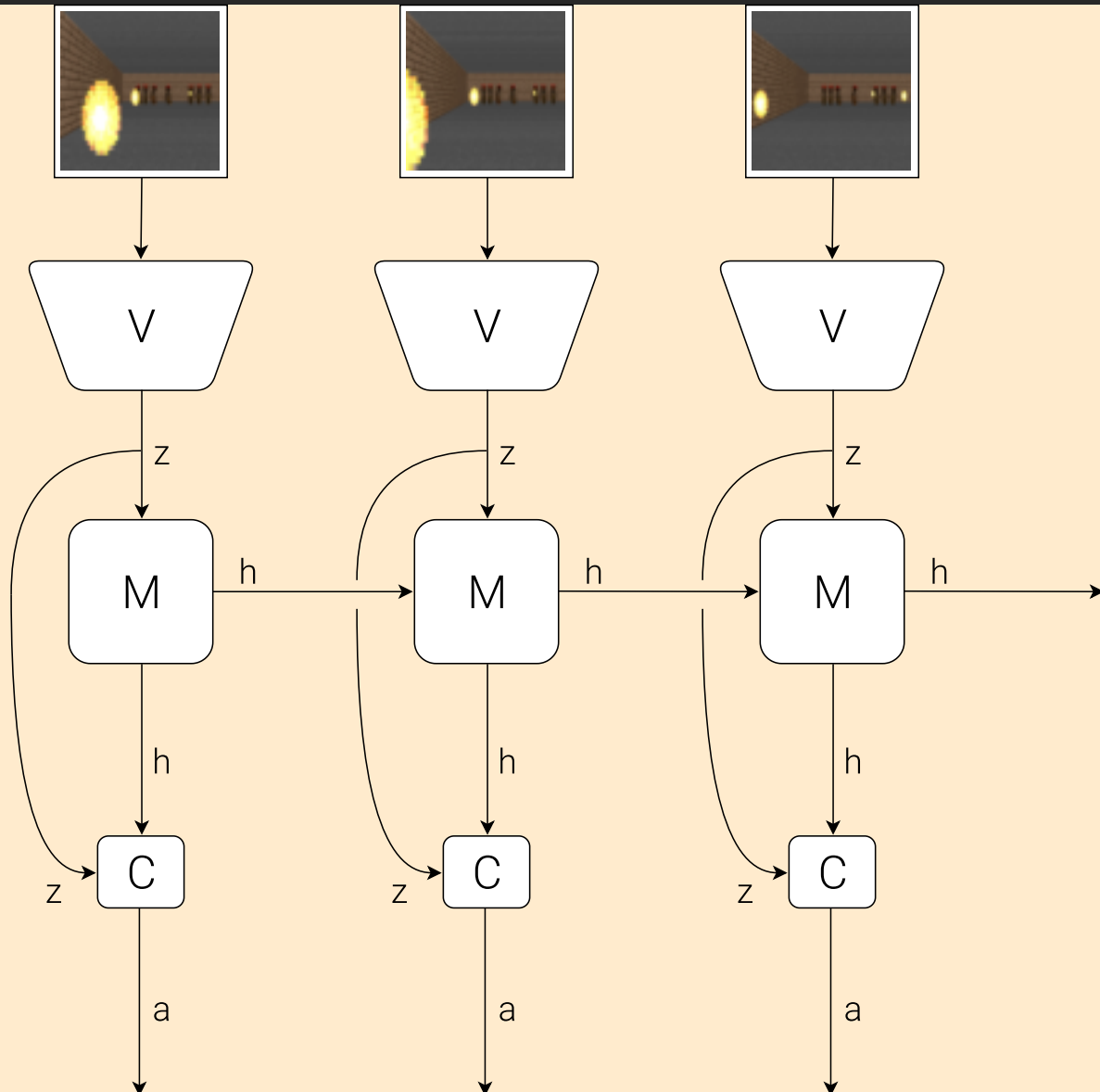
## World Model

The **Vision Model (V)** encodes the high-dimensional observation into a low-dimensional latent vector.

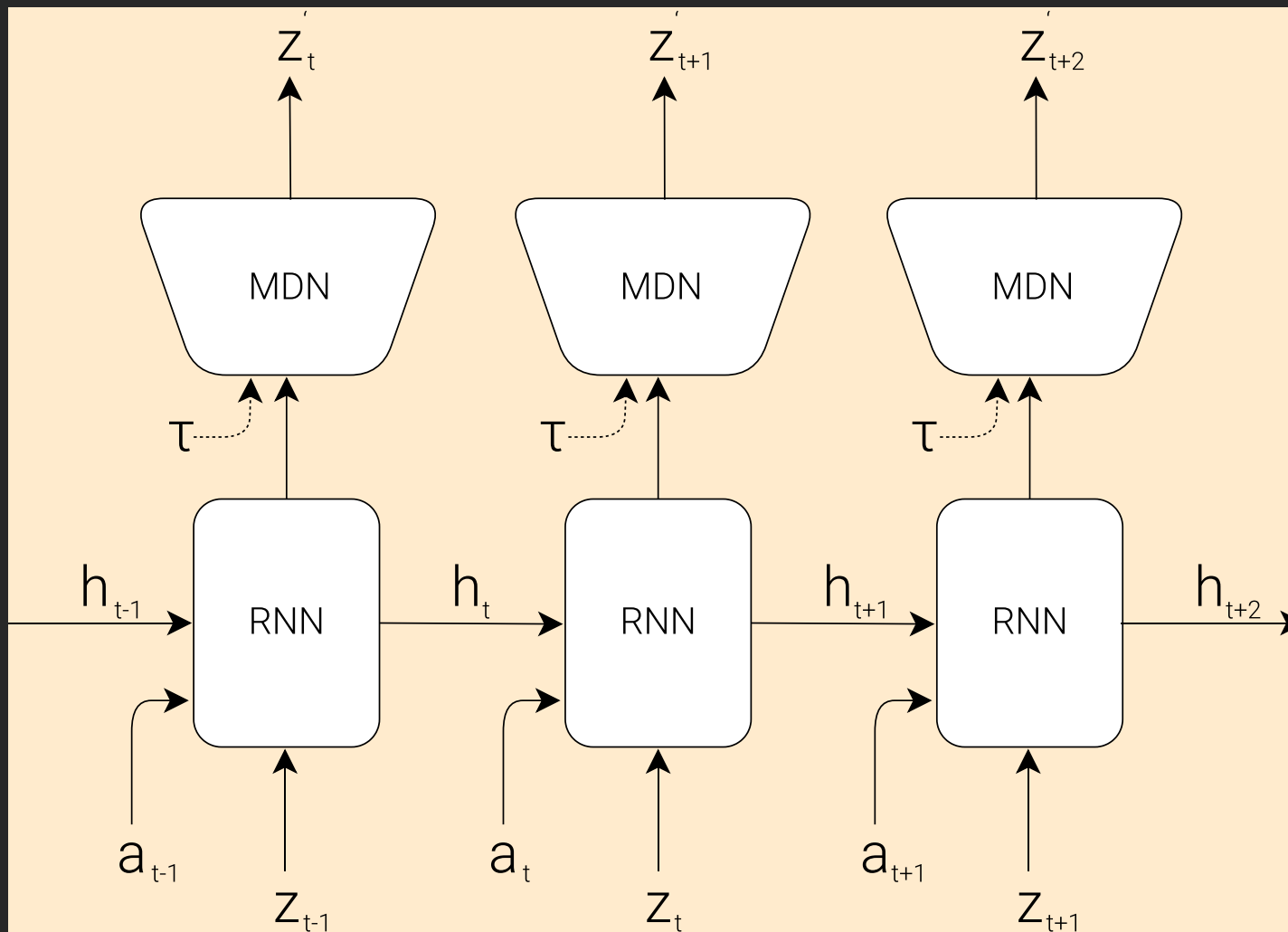
The **Memory RNN (M)** integrates the historical codes to create a representation that can predict future states.

A small **Controller (C)** uses the representations from both **V** and **M** to select good actions.

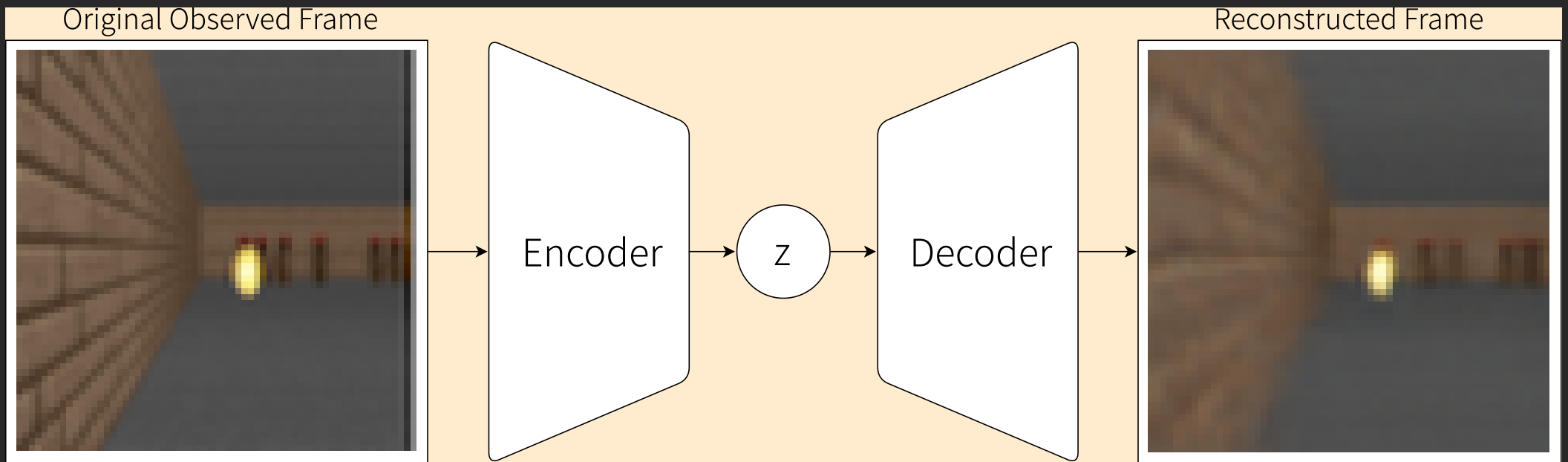
The agent performs **actions** that go back and affect the environment.



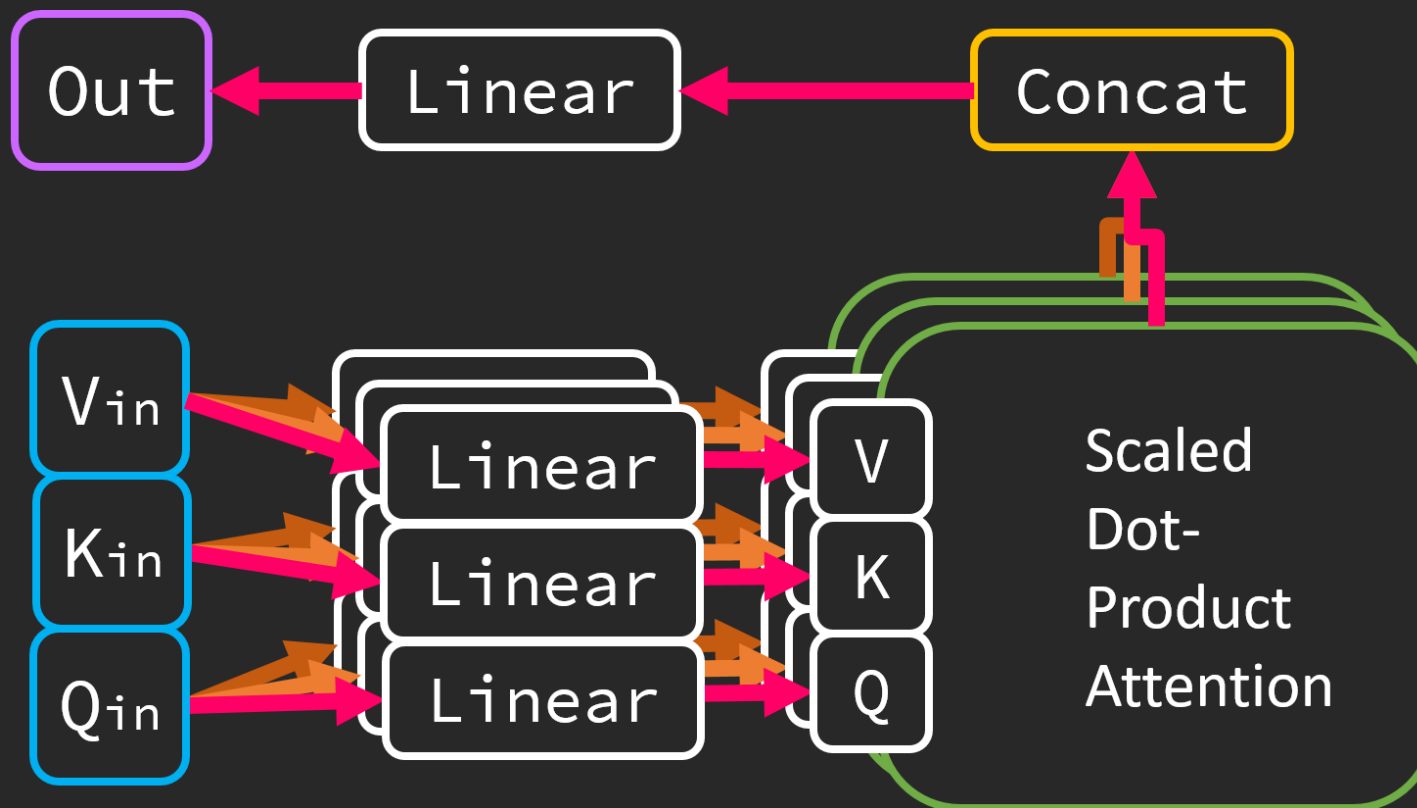
# World Model



# World Model

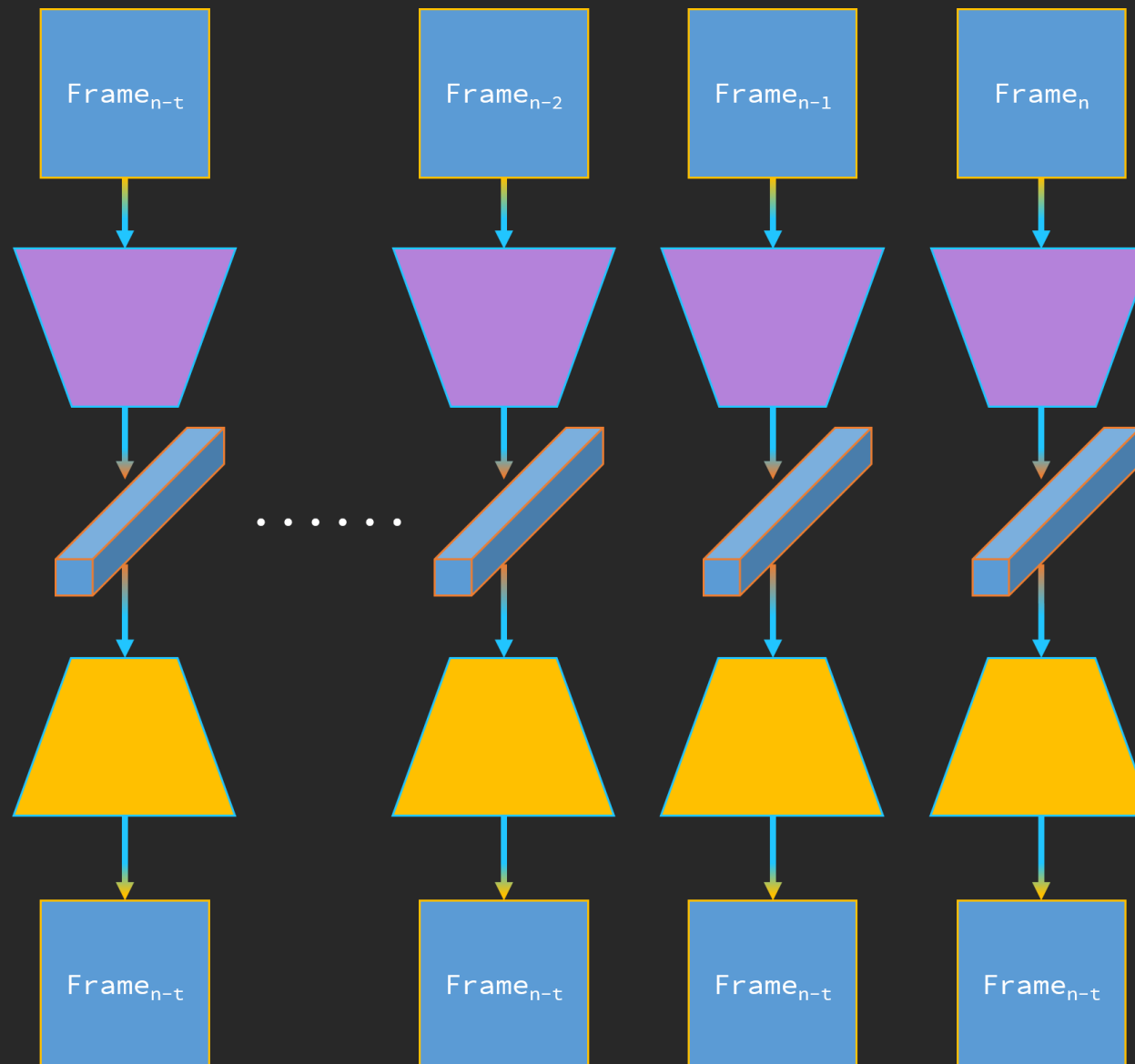


# You just Need Attention

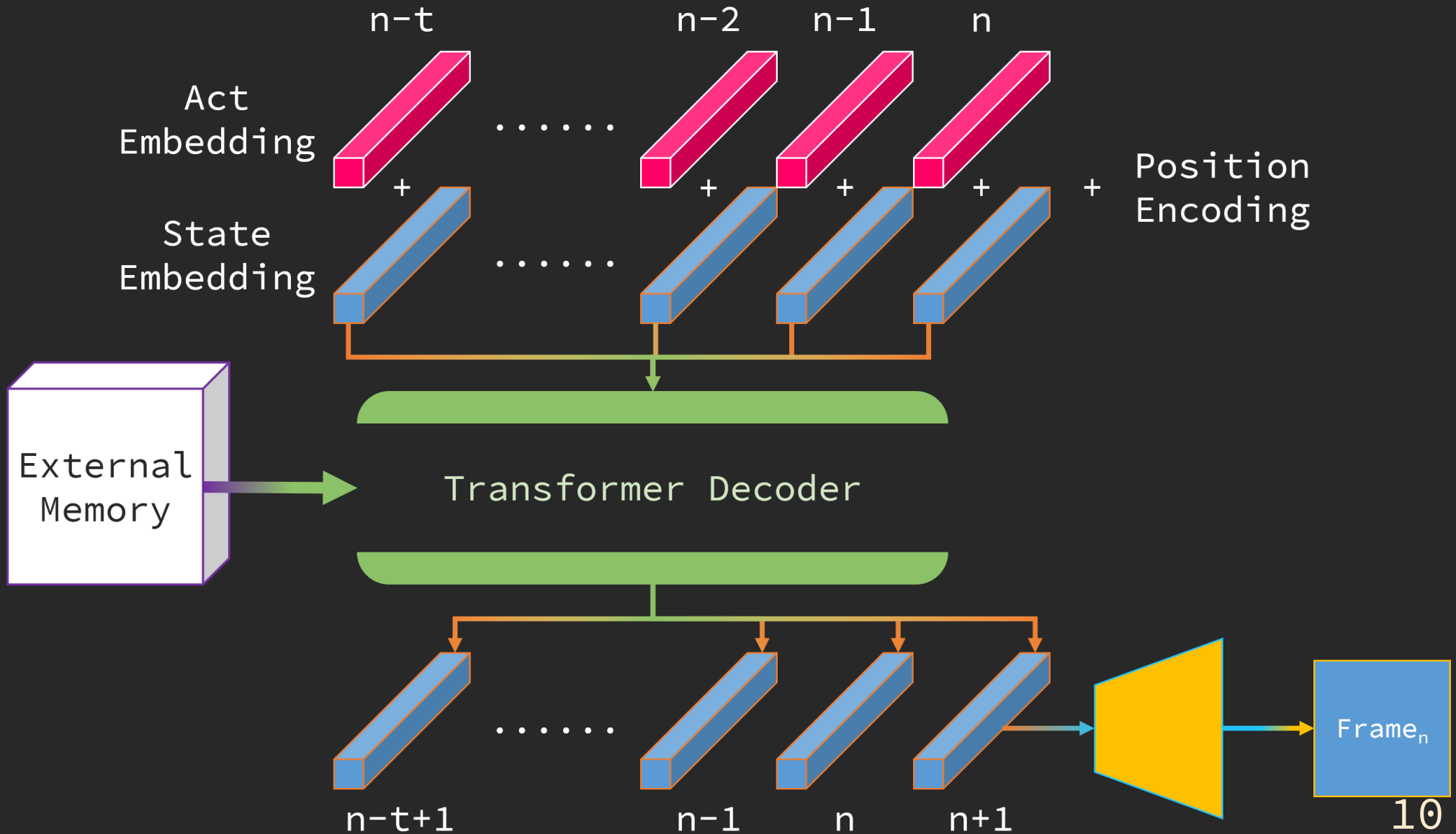




# You just Need Attention



# You just Need Attention



# Need to be Faster

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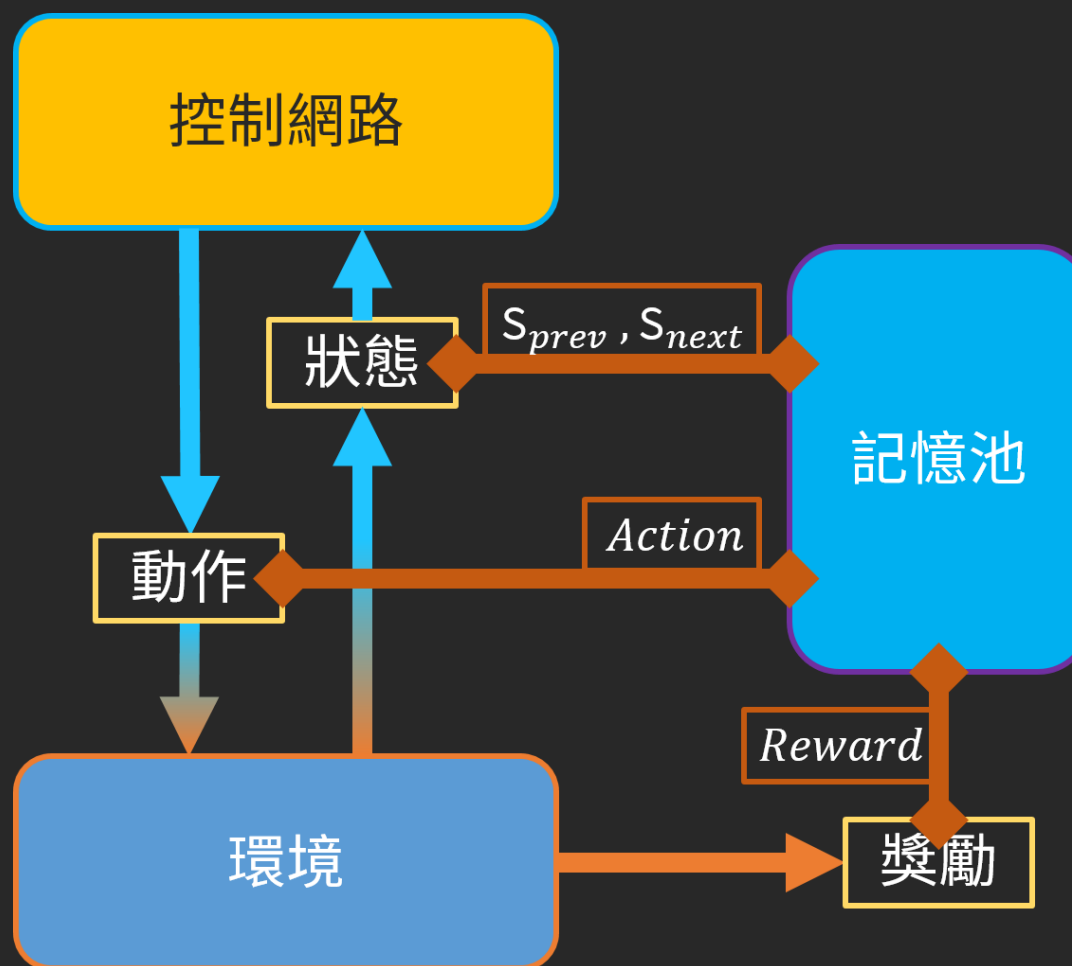
Transformer 理論上能帶來比 LSTM 更好的效果。

但其需要消耗的運算資源與記憶體量實在是太多了。

為了保障遊戲的即時性，將會嘗試使用 Linformer 或 Performer 等等以減少運算量為目標的 Transformer 變形。

# Challenge

在訓練模型時，使用 Transformer Decoders 中間的隱藏向量進行強化學習。



# Schedule

	10、11	12、13	14、15	16、17	18
Design encoder and decoder					
Design State Generator					
to be Faster					
Challenge					
Complete the system					
Demo					