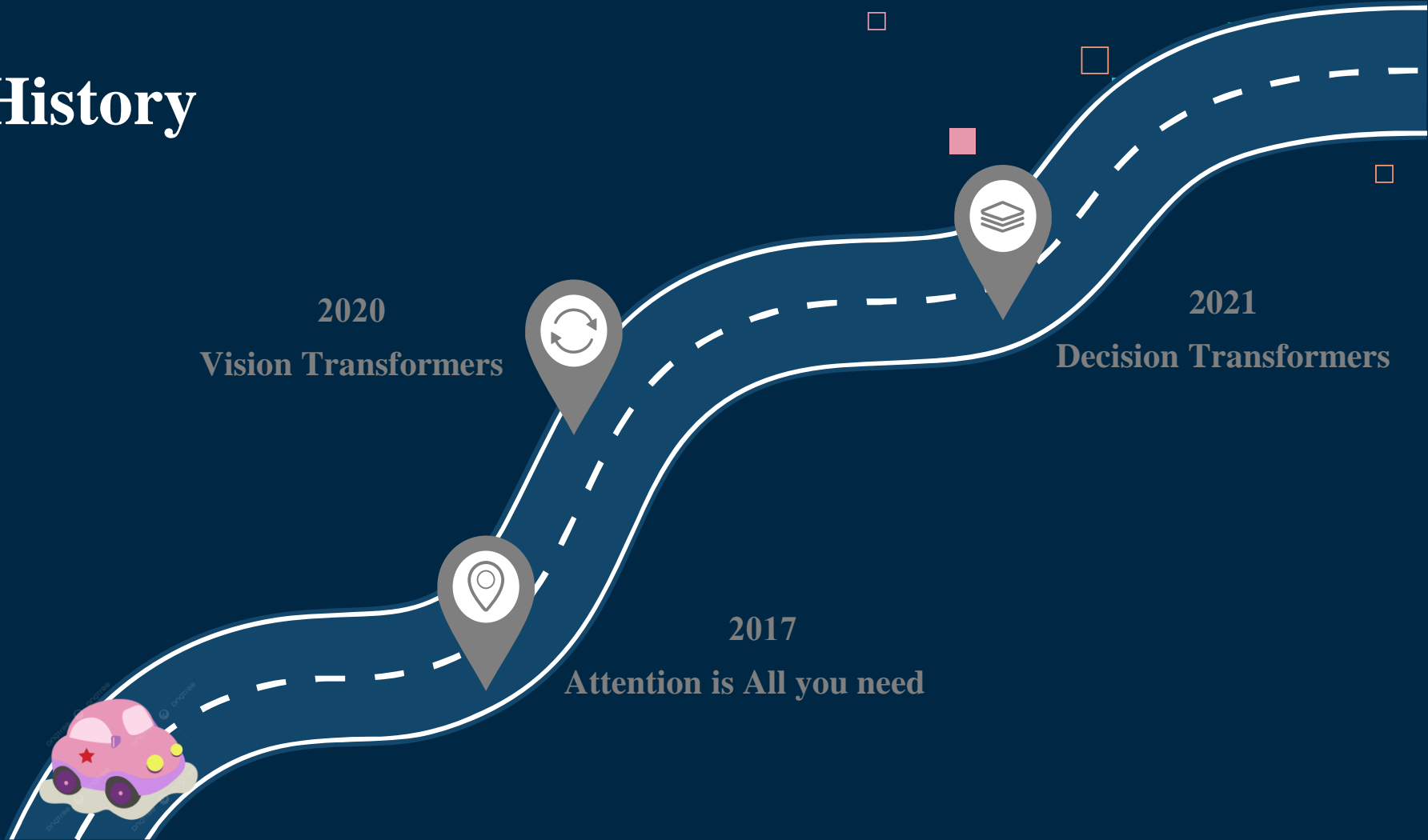


Decision Transformers

Seyede Setare Khosravi | Mobina Lashgari
Prof: Dr. Saeed Shamaghdari
Fall 2024

History



History

2020
Vision Transformers



2021
Decision Transformers



2017

Attention is All you need



History

2020
Vision Transformers



2017

Attention is All you need

2021
Decision Transformers



History

2020
Vision Transformers



2017
Attention is All you need



2021
Decision Transformers

History

2020
Vision Transformers



2021
Decision Transformers

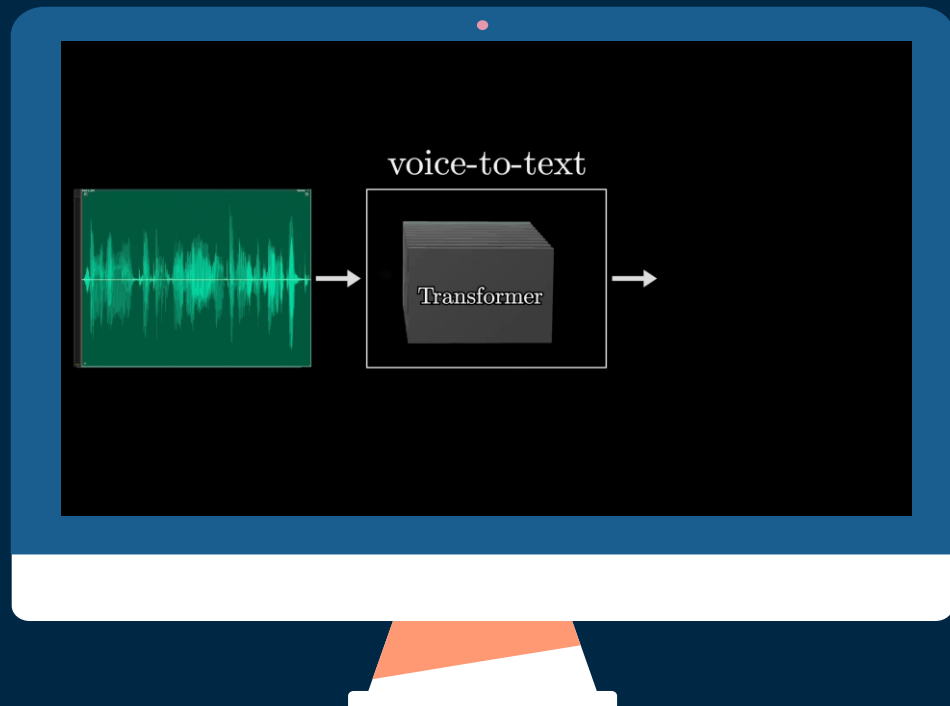


2017

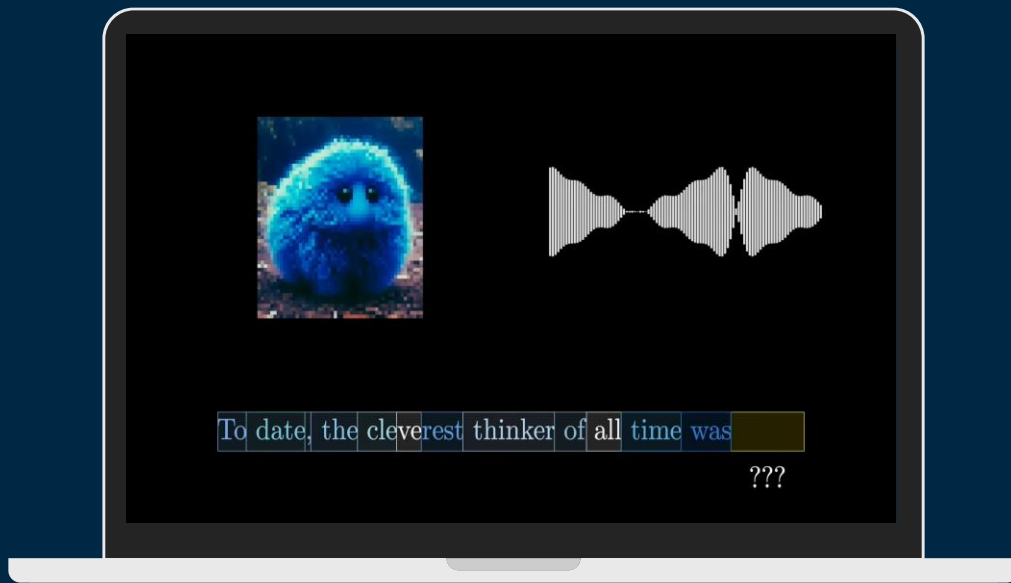
Attention is All you need



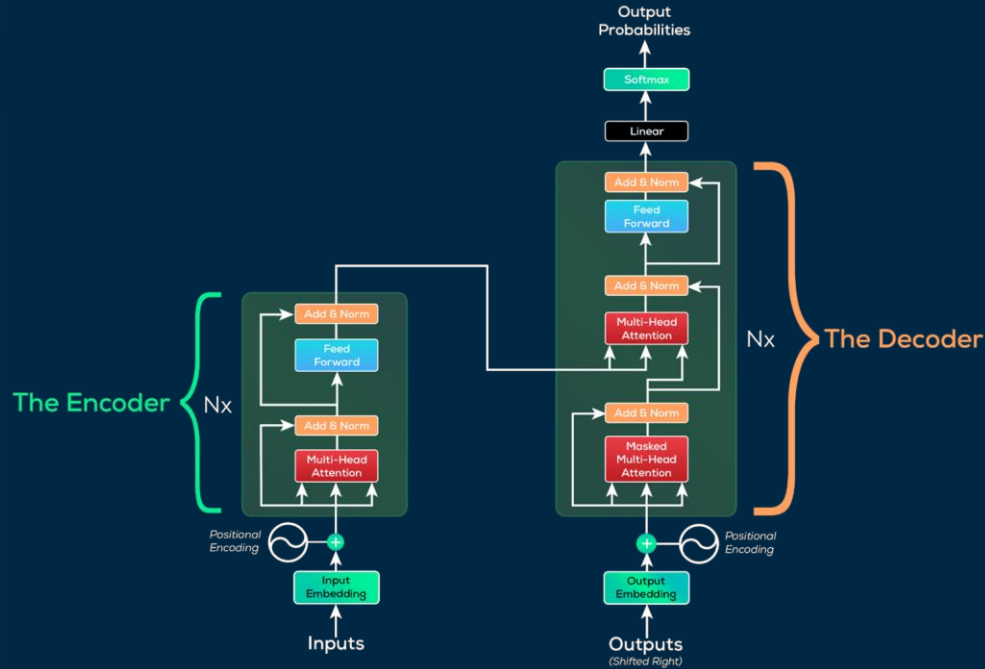
Transformers Applications



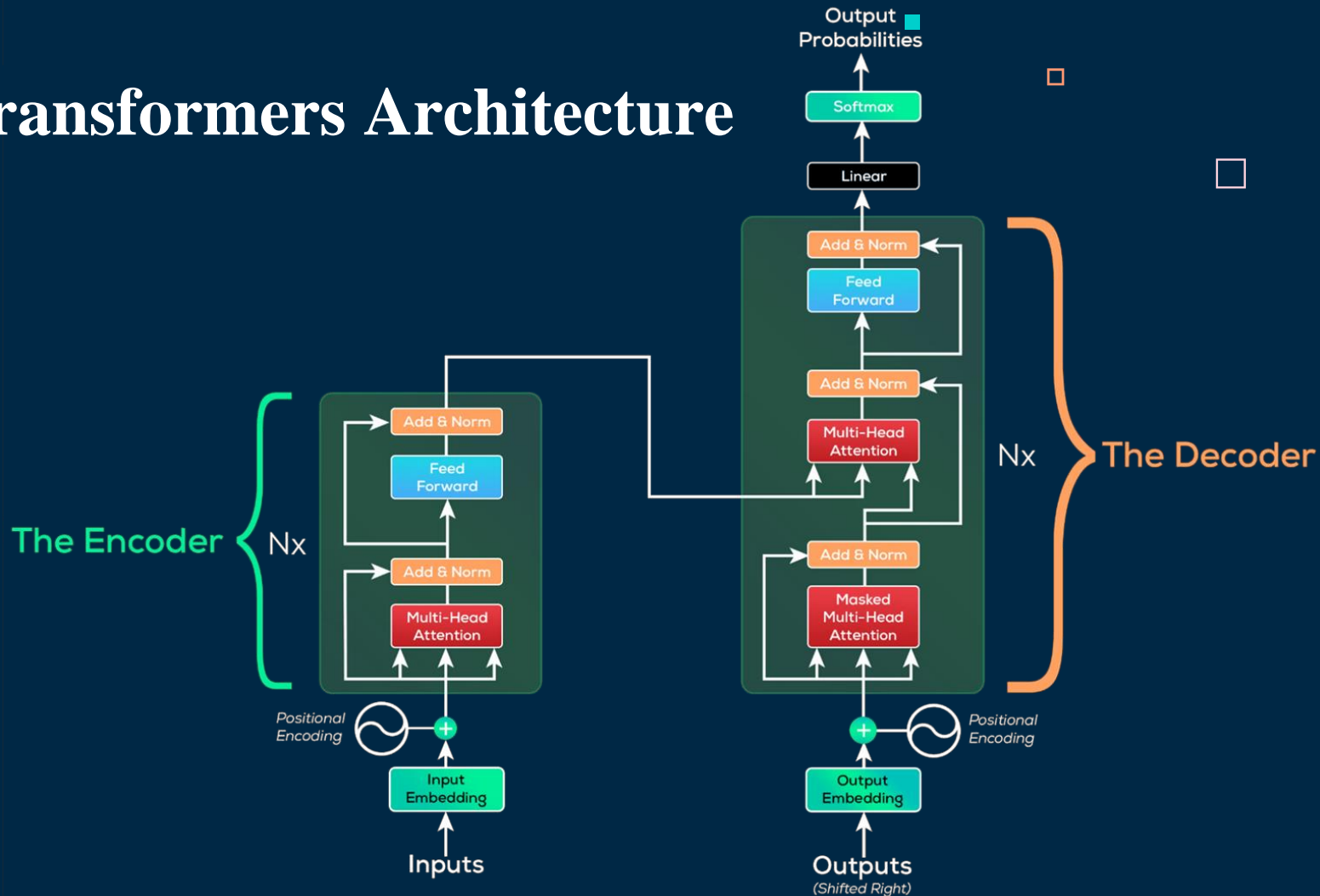
Transformers Architecture



Transformers Architecture



Transformers Architecture



Attention Mechanism

$$\text{Attention}(Q, K, V) = \text{softmax}\left(\frac{QK^T}{\sqrt{d_k}}\right)V$$

Offline RL VS Online RL

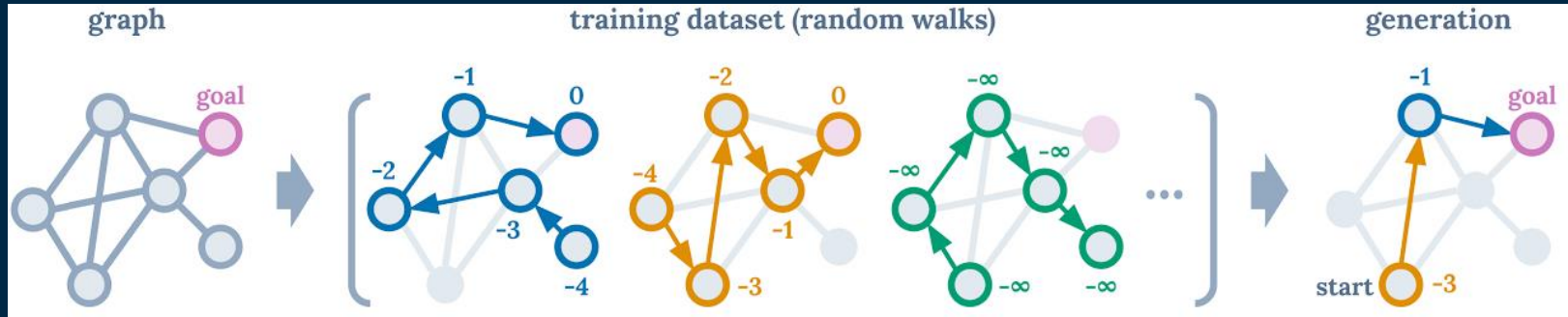
Reinforcement Learning with Online Interactions



Offline Reinforcement Learning



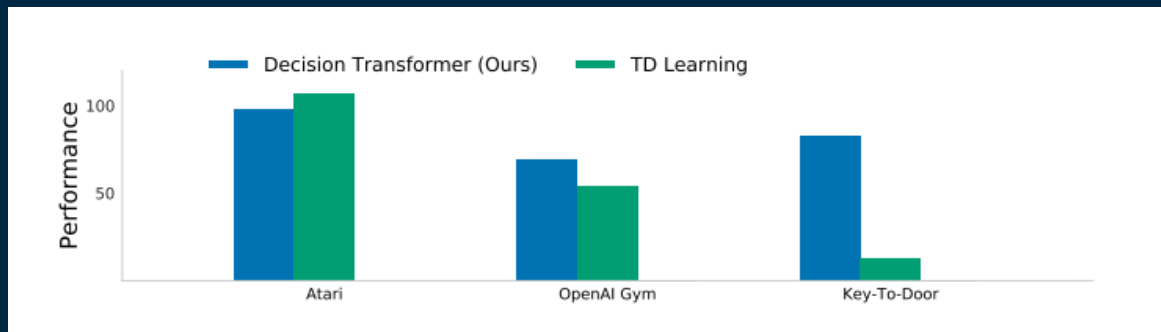
Decision Transformers



Decision Transformers

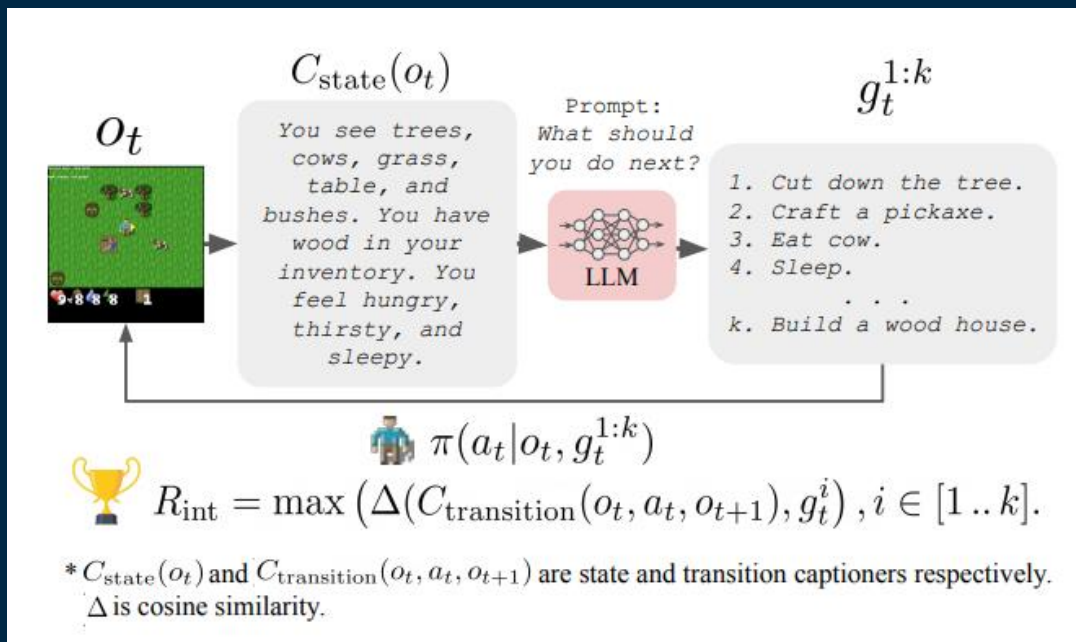
... \hat{R}_{t-1}

Decision Transformers



Game	DT (Ours)	DT with no context ($K = 1$)
Breakout	267.5 ± 97.5	73.9 ± 10
Qbert	15.1 ± 11.4	13.6 ± 11.3
Pong	106.1 ± 8.1	2.5 ± 0.2
Seaquest	2.5 ± 0.4	0.6 ± 0.1

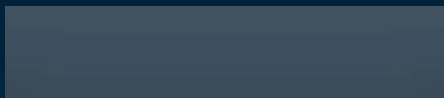
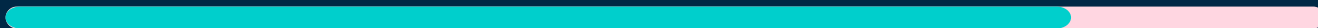
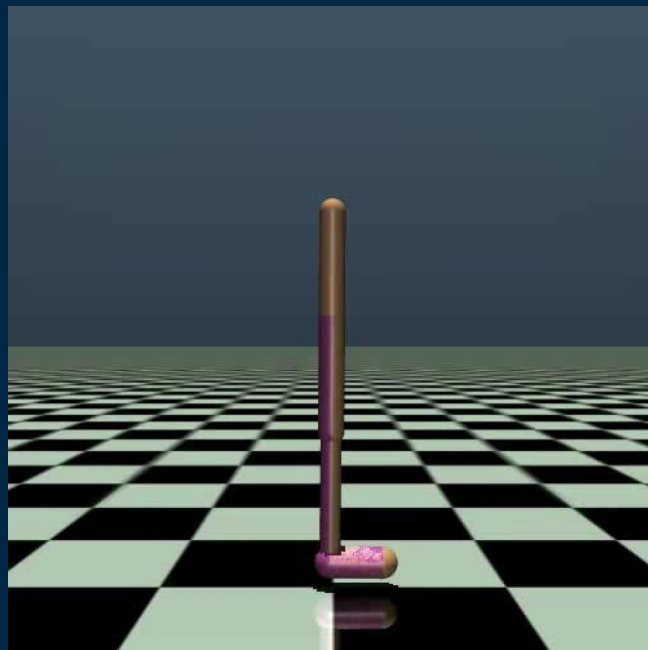
Bringing the capabilities of LLMs to robotics



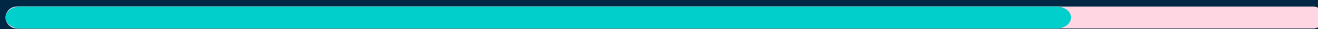
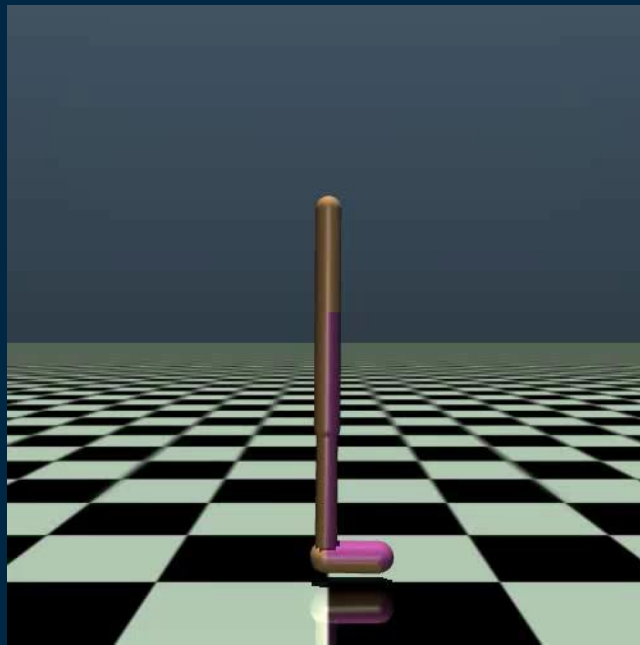
Future Research



Simulation



Simulation





■ Thank you for your
“Attention”