Using Pre-trained ViT to improve Decision Transformers

A project proposal by Akash

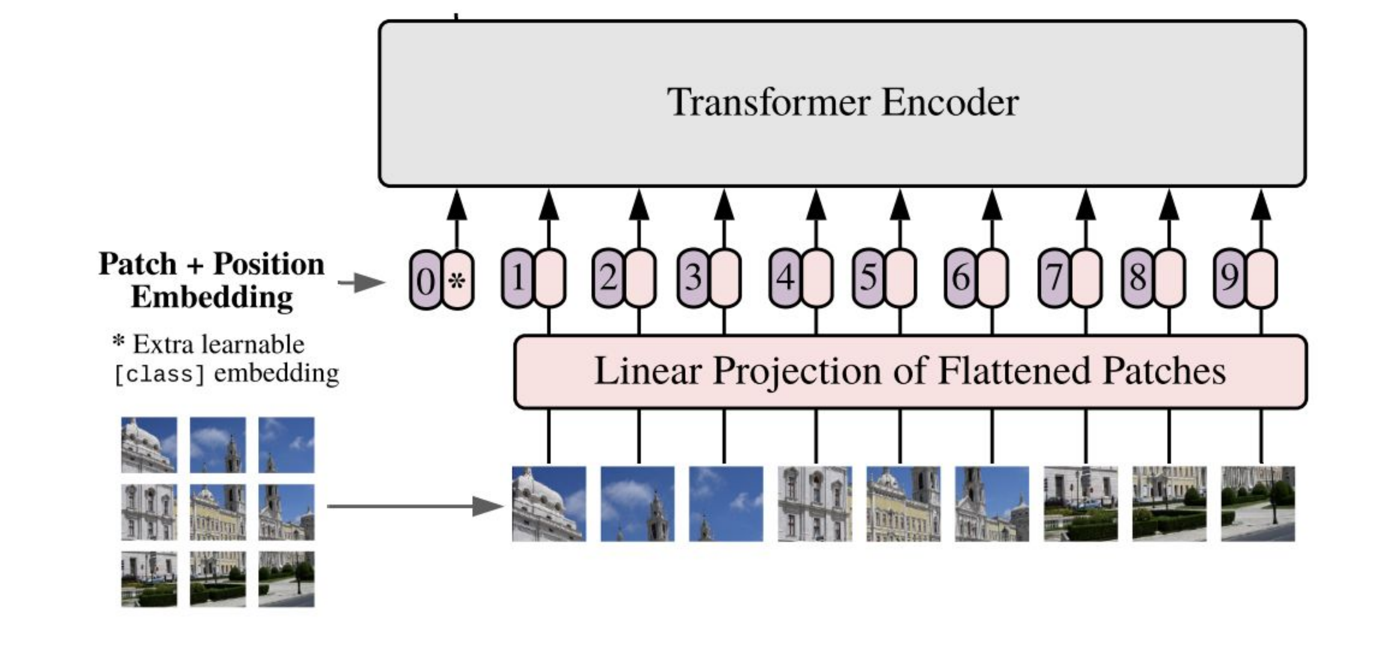
Existing System

- Decision Transformers is a novel architecture that aims to generate actions in an auto-regressive manner.
- Current DTs typically use CNNs to extract image features.
- Recent advancements like the StARformers architecture have introduced self-attention mechanism for improved performance, but it does not take advantage of pre-trained ViT models to improve the state representation.

Proposed System

- The use of pre-trained Vision Transformer (ViT) models, such as the vit-base model introduced by Google Brain, has the potential to enhance the encoding of image/state representation in DTs.
- The hypothesis is that a pre-trained model, even one without an extensive domain-specific training, could enhance the policy learning process.

ViT-representation generation


Transformer Encoder
Patch + Position Embedding
* Extra learnable [class] embedding
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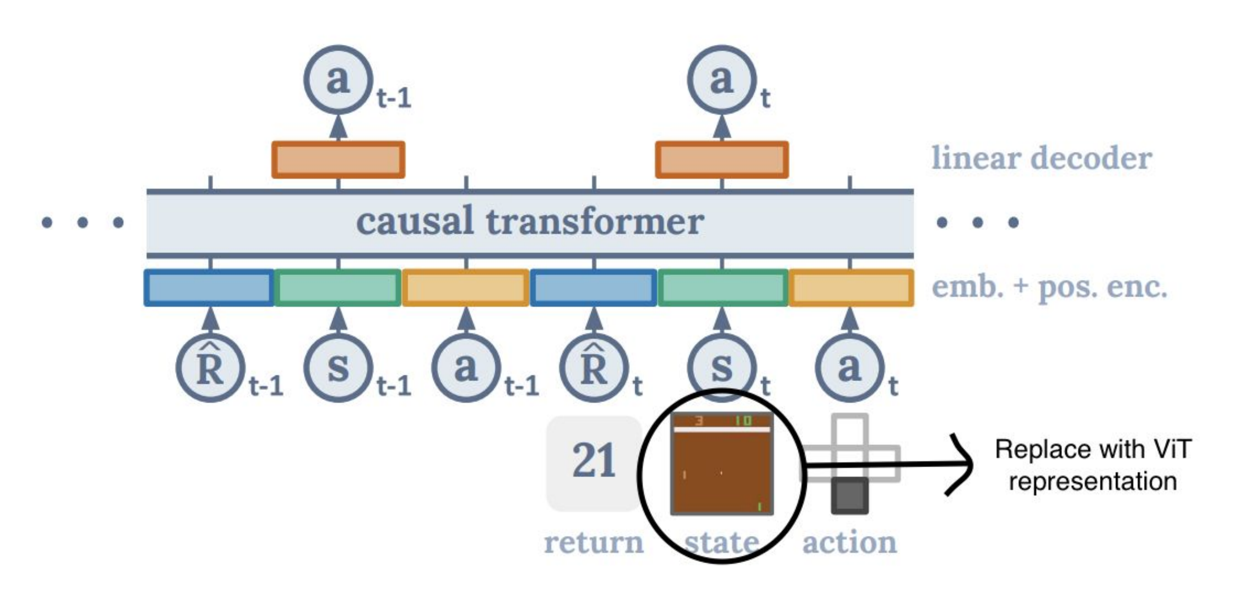
Linear Projection of Flattened Patches

Where it fits in DT



References

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Questions?