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from transformers import AutoTokenizer, AutoModelForCausalLM

import torch

import random


# Load ProtGPT2 or equivalent model

tokenizer = AutoTokenizer.from_pretrained("nferruz/ProtGPT2")

model = AutoModelForCausalLM.from_pretrained("nferruz/ProtGPT2")


def generate_binders(fusion_context, strategy='low_shot', num_candidates=10):

    seed_sequence = fusion_context['embedding_vector'][:10]

    seed = "".join([chr(int(65 + abs(int(x * 10)) % 20)) for x in seed_sequence])

    input_ids = tokenizer.encode(seed, return_tensors="pt")


    outputs = model.generate(

        input_ids,

        do_sample=True,

        top_k=950,

        top_p=0.96,

        temperature=1.0,

        max_length=200,

        num_return_sequences=num_candidates

    )


    binders = []

    for output in outputs:

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```
sequence = tokenizer.decode(output, skip_special_tokens=True)
sequence = ".join([aa for aa in sequence if aa in "ACDEFGHIKLMNPQRSTVWY"]])
if len(sequence) > 30:
    binders.append(sequence)

return {"generated_binders": binders}
```