

QuestVille: Procedural Quest Generation Using NLP Model

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Background: NLP, BERT, GPT-2

Natural Language Processing is a field to study how computers can understand and interact with human language.

BERT understands the context well.

GPT-2 is suitable for some tasks like text generation.

Related Works

Procedural Generation of Interactive Stories using Language Models

<https://dl.acm.org/doi/10.1145/3402942.3409599>

AFFECTIVE DIALOGUE GENERATION FOR VIDEO GAMES

<https://essay.utwente.nl/89325/>

Procedural generation of branching quests for games

<https://www.sciencedirect.com/science/article/pii/S1875952122000155?via%3Dihub>

Aim

To create PCG automatically generating engaging quests as a tool to support game developers.

Methods

1. Destroy this magical ring.
2. You must destroy this magical ring, that will corrupt you, by casting it into the volcano in enemy territory.

Servants of the evil villain will hunt you along the way, you must not let the ring fall into their hands. You are the only hero capable of doing this!

Methods

NPC name selection

Quest prompt selection

NPC relation prefixing

BERT step

GPT-2 step

Methods

I need to bring the [MASK] to Bob because it is very important to him.



I need to bring the letter to Bob because **that's the only piece that was out there with this kind of information.**

Methods



Result & Discussion

Please help Isabella **in her time of need.**

Please help Isabella find **her way back home as quickly as possible.**

Please help Isabella find ingredients **to make this amazing, gorgeous pie.**

Result & Discussion

Help Isabella find ingredients for a pie **with strawberries, apricos and a touch of mustard.**

Help Isabella find ingredients for a pie **with a side of red pepper pie and some black cheese.**

Bring Alice the keys so John can **go back in time. In fact, Alice is just after the key from her sister.**

Alice hates John. Bring Alice the keys so John can **take them. John will get upset and will attack her first.**

Result & Discussion

Limitations

- The end result is not always a coherent sentence that makes sense in the given context.
- The output can sometimes be inappropriate for a younger audience.
- Because of an enforced limit on the number of generated characters, sometimes sentences will abruptly end. We try to cut off sentences at the last dot but this is not that simple in practice (dots do not always signal the end of a sentence).

Positive points

- There are instances in which a very high quality, coherent sentence with a proper motivation to the quest is produced.
- Adding relation prefixes to the prompt very often leads to the resulting sentence being steered towards this relation.
- BERT seems to find very suitable words to fill the masked word in a lot of cases.

Conclusion

Useful results were produced, but useless or inappropriate sentences got generated as well.

Relations between NPCs steer the model in a certain direction.

Their NLP approaches are not yet good enough for use in commercial video game development.

Thank you for your attention!