DUNGEONS & DRAGONS FANTASY ADVENTURE GENERATION

TEXT GENERATION

219381B – Akila Peiris

CONTENT

Dungeons and Dragons

FRW Dataset

GPT Models

Text Generation

Entity Classification

Dungeons and Dragons

DUNGEONS AND DRAGONS (D&D, DnD)

- Open-ended
- Pen and paper
- Tabletop
- Role Playing Game (RPG)
- Since 1974
- Predefined rules
- Setting
  - lore, species, artifacts, statistics, and rules

DUNGEON MASTER (DM)

- Conducts gameplay
- Plays Non-Playable Characters (NPC)
- Regulate player actions

Figure 1: A group of people playing D&D. The Dungeon Master (middle) describes a scenario. Taken from the Critical Role web series.

ADVENTURE

- A guide
- Self-contained game narrative
- Quest

- States:
  - Initial state
  - Intermediate states + transition conditions
  - End state (goal)
- NPCs, rewards, objects + Narrative

FORGOTTEN REALMS

- De-facto default setting for D&D 5e
- High fantasy
- Medieval to Middle Eastern and Asian themes
- Has the most resources

- Fandom Wikia
  - https://forgottenrealms.fandom.com/
- 42000 articles

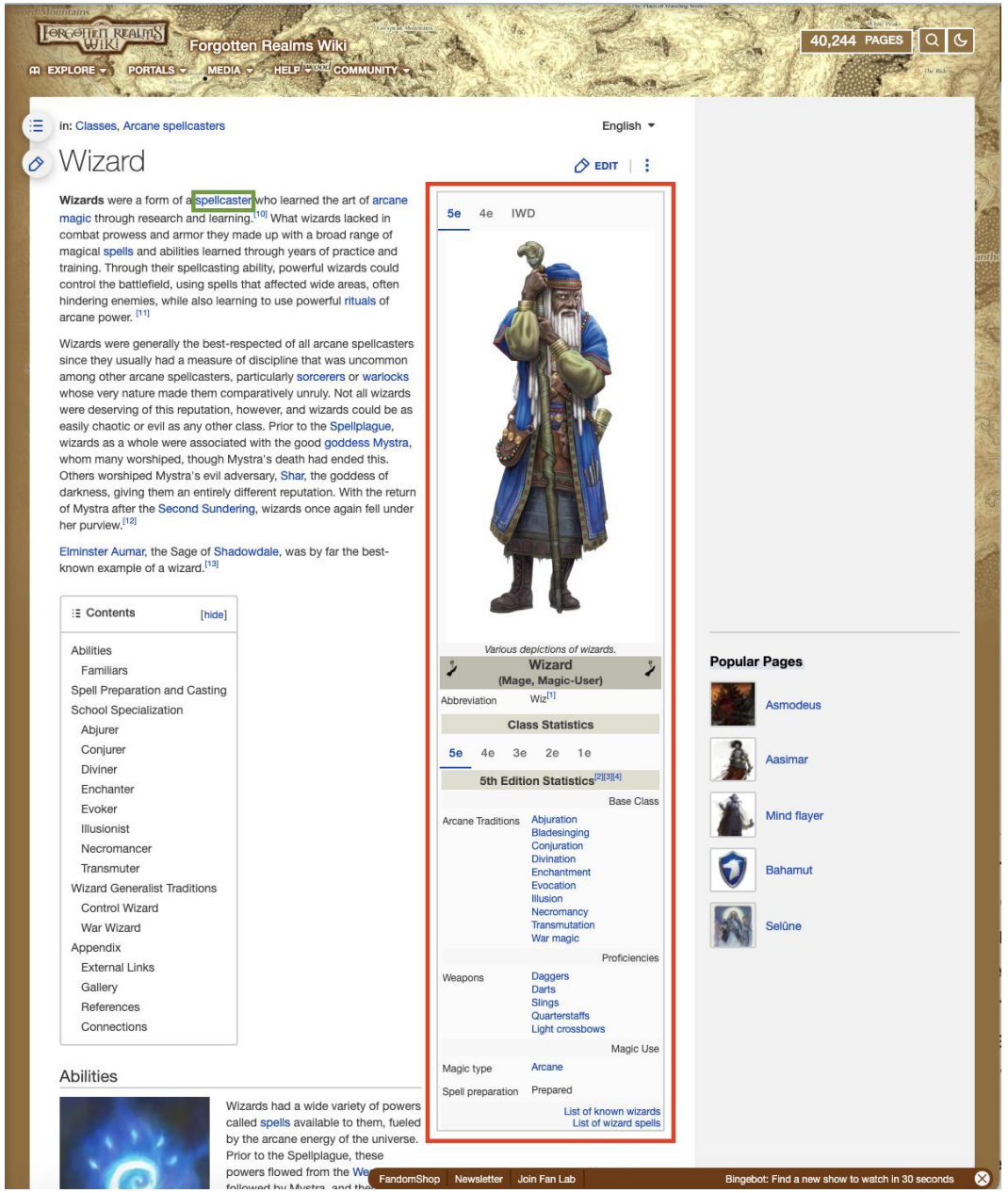
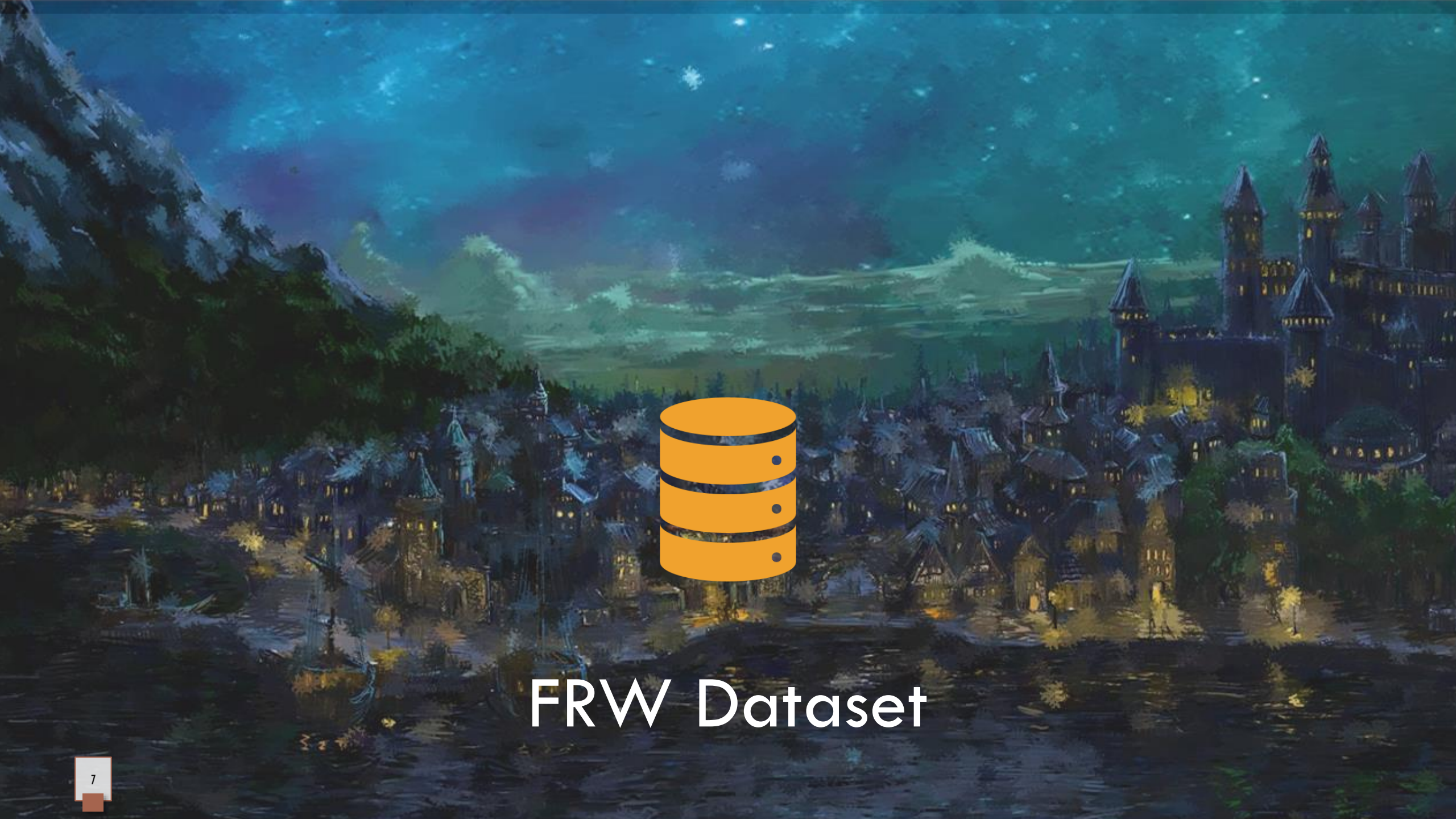


Figure 2: Forgotten Realms Wikia article for *Wizard*.
(Green – first link, Red – Wikipedia Infobox)

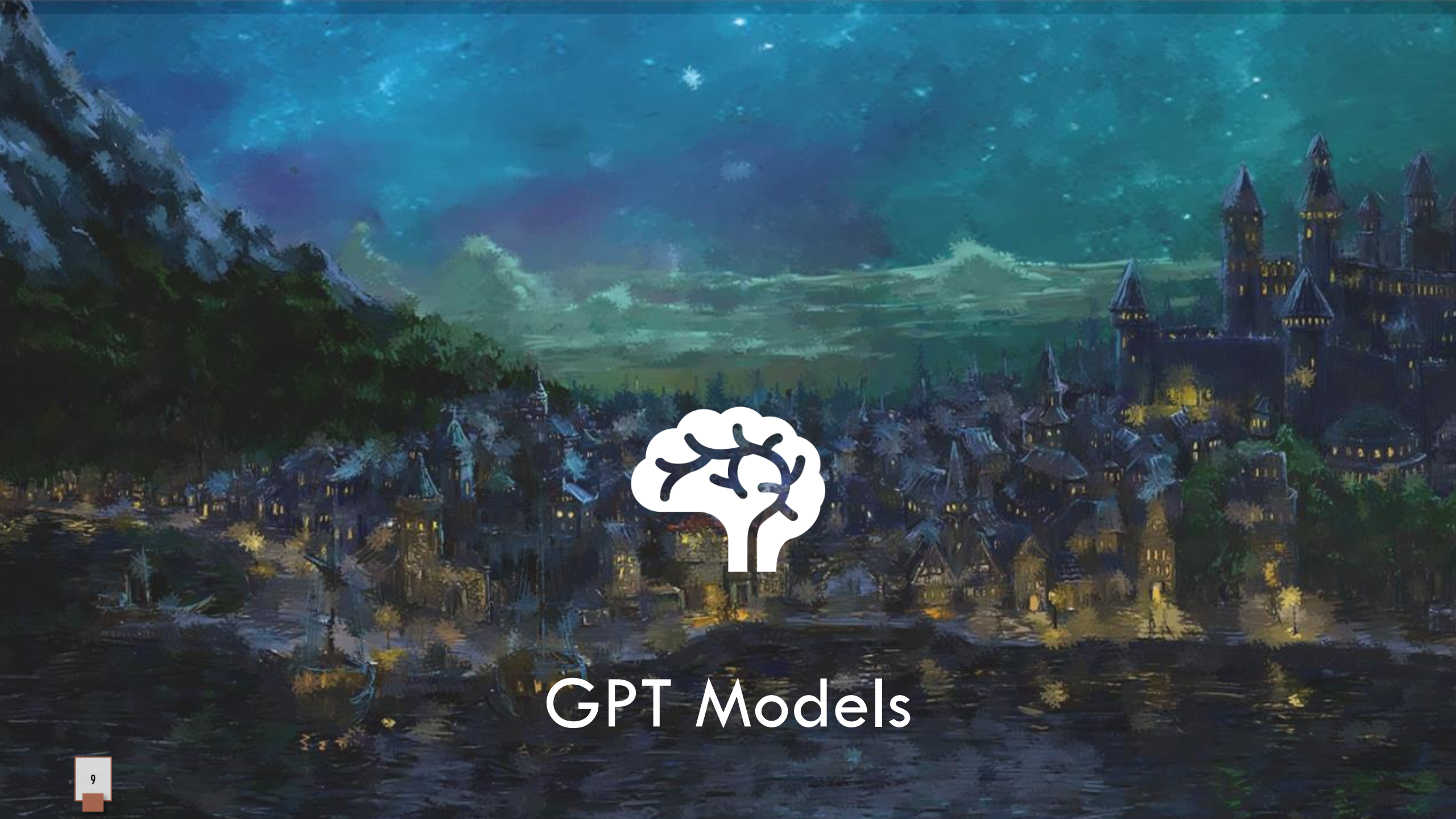


FRW Dataset

FORGOTTEN REALMS WIKI (FRW) DATASET

Dataset	Description
FRW-P	Raw plain text
FRW-J	A JSON structure with plain text indexed by article title
FRW-FJ	A JSON structure with only the first paragraph of articles indexed by article title
FRW-L	A directional graph indicating all the references in the articles to other articles
FRW-FL	A directional graph indicating the first references in the articles to other articles
FRW-CL	A directional graph indicating the category references in the articles to category articles
FRW-I	A JSON structure for the Wikipedia infobox substructures indexed by article title
FRW-PE	Poincaré embedding for the first links
FRW-W	2 Word2Vec models for full text (CBOW and Skip-gram)
FRW-D	2 Doc2Vec models for full text (PV-DBOW and PV-DM)
FRW-FD	2 Doc2Vec models for first paragraph text (PV-DBOW and PV-DM)

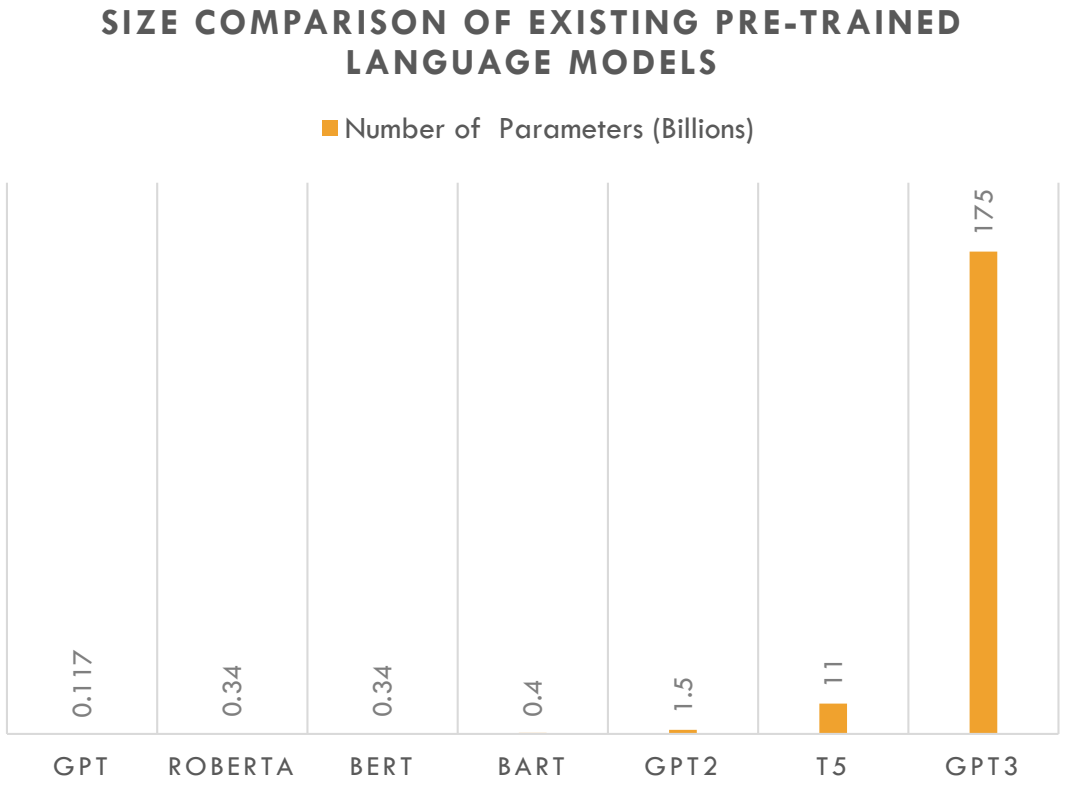
https://huggingface.co/datasets/Akila/ForgottenRealmsWikiDataset/tree/main



GPT Models

GENERATIVE PRE-TRAINED TRANSFORMERS (GPT)

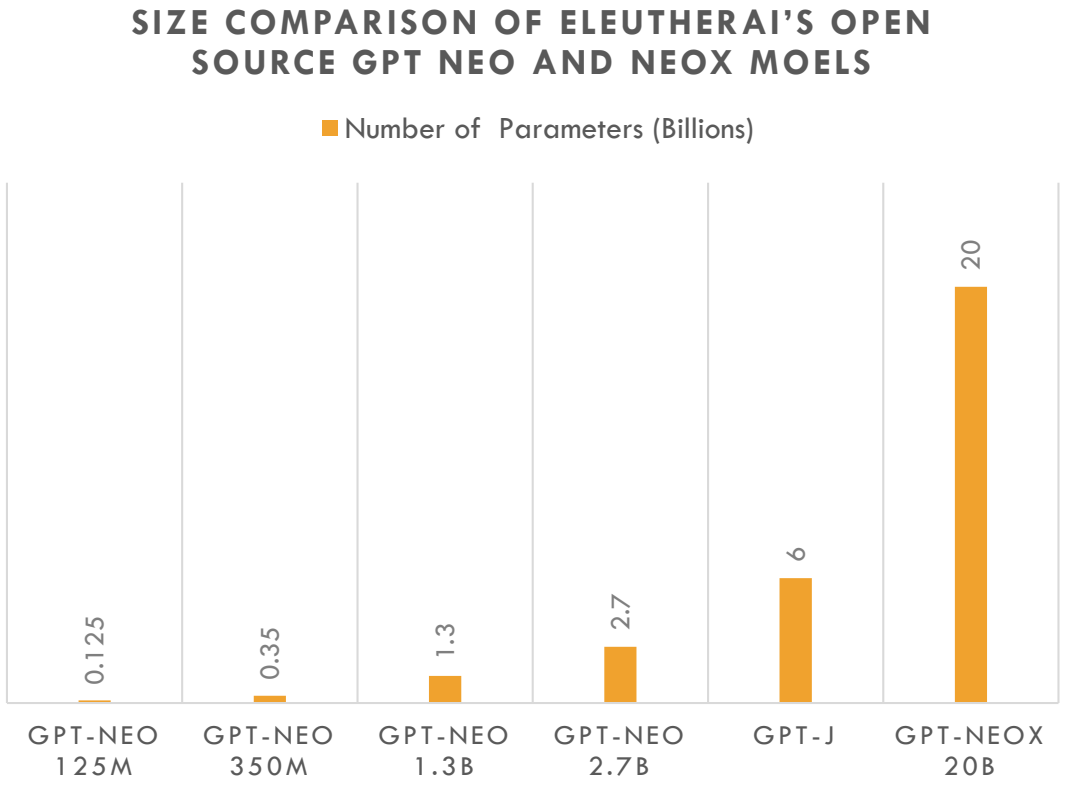
- GPT [1]
  - deep learning
  - autoregressive
  - language model
  - GPT3 [2] – 175 Billion parameters



[1] A. Radford, K. Narasimhan, T. Salimans, and I. Sutskever, "Improving language understanding by generative pre-training," 2018
[2] T. Brown, B. Mann, N. Ryder, M. Subbiah, J. D. Kaplan, P. Dhariwal, A. Neelakantan, P. Shyam, G. Sastry, A. Askell et al., "Language models are few-shot learners," Advances in neural information processing systems, vol. 33, pp. 1877–1901, 2020

GENERATIVE PRE-TRAINED TRANSFORMERS (GPT)

- GPT-Neo [3] (and Neox) [4]
  - Opensource alternative
  - EleutherAI
  - Neo – 2.7 Billion parameters
  - Neox – 20 Billion parameters [5]



[3] S. Black, L. Gao, P. Wang, C. Leahy, and S. Biderman, "GPT-Neo: Large Scale Autoregressive Language Modeling with Mesh-Tensorflow," Mar. 2021, If you use this software, please cite it using these metadata. [Online]. Available: https://doi.org/10.5281/zenodo.5297715

[4] A. Andonian, Q. Anthony, S. Biderman, S. Black, P. Gali, L. Gao, E. Hallahan, J. Levy-Kramer, C. Leahy, L. Nestler, K. Parker, M. Pieler, S. Purohit, T. Songz, P. Wang, and S. Weinbach, "GPT-NeoX: Large scale autoregressive language modeling in pytorch," 2021. [Online]. Available:http://github.com/eleutherai/gpt-neox

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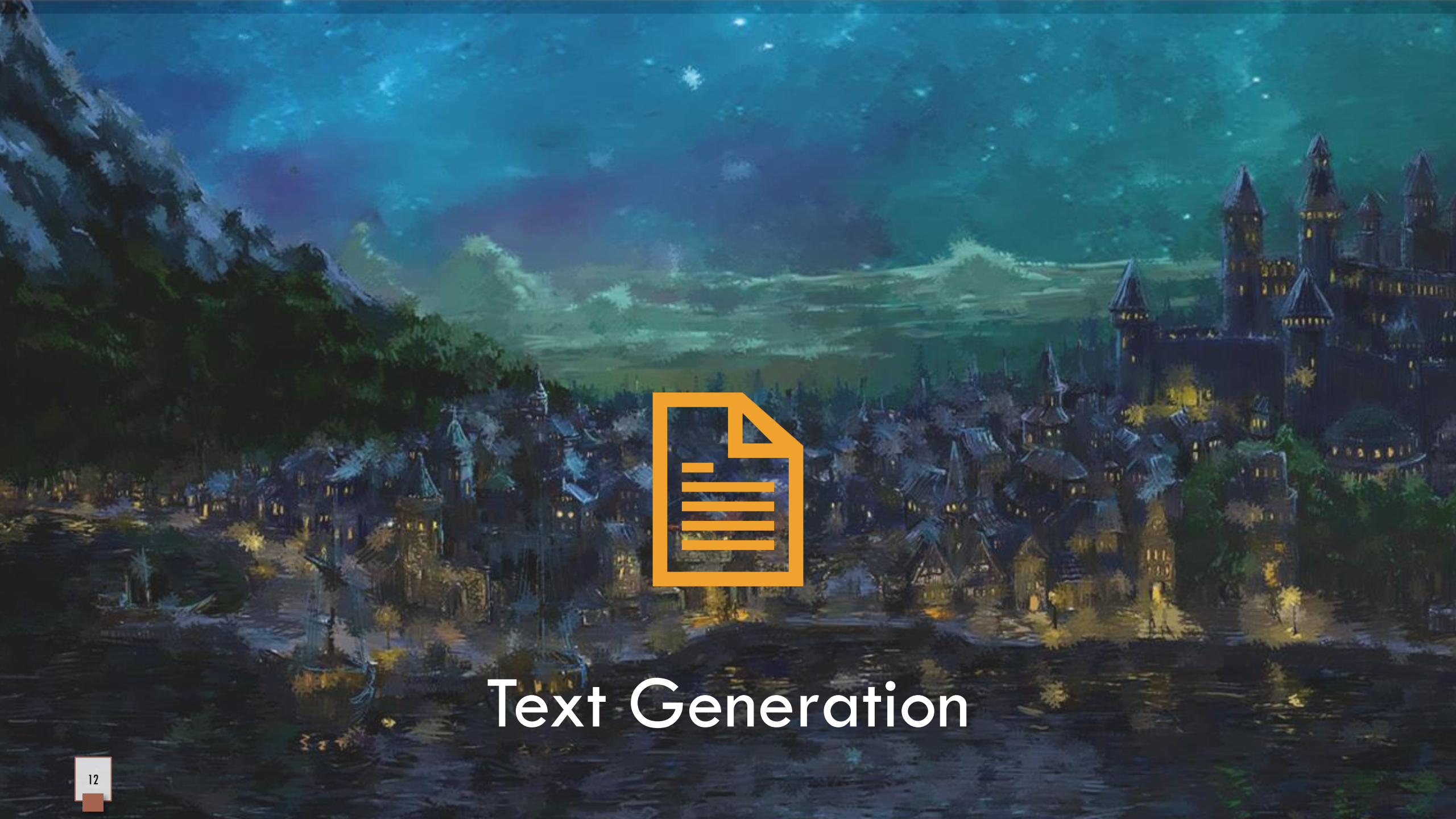

Text Generation

TRAINING THE MODEL

- GPT Neo 1.3B (GPT3_XL)
- FRW-J dataset

D&D TEXT GENERATION

Input prompt

"A Bard, A Wizard, and a Paladin walk into a tavern. The bard hides behind a group of tables, drinking and hiding his face. The Wizard hands over the Handbook of All Things Magical to the paladin, who hangs it up and begins to read. The bard steals the book, dissolves the rules and instructions, and replaces them with his own. The party meets up at the next table and learn that the wizard took the book because it was to be penned by him. Bards make a sign of the wizard to politely take the book and tell him the party is there to do his bidding. The wizard read the book, the bard says his or her name and uses it to vanish out into the night. As the wizard takes off, the bard doorstep knights and spells a silent alarm before whispering, "He is a wizard, and his old book was the Handbook of All Things Magical. I will guard it for him. […]"

"A Bard, A Wizard, and a Paladin walk into a tavern. The Bard says that he lives in Baldur's Gate in a tavern dedicated to a wizard named Juiblex. The Bard tells Xanatos about his origin story. In the tavern, the Bard mentions non-existence of its streets. The Bard explains that the people of Baldur's Gate rarely go outside of the city, and are plagued by strange things. The Bard meets a human man. The Bard asks the man why he is "always" being summoned by Juiblex, whereas he is a cast-away person who wandered the Realms. The Bard mentions a dream he had in which he was being magically summoned to the tavern to meet the wizard, and the man says he has ably catalogued the madness of the city. The Bard asks why people don't leave, and the man counters that only the rich can afford to leave. The Bard asks the man if he agrees with the praise of his dream, and he agrees by telling him that 50% of the people in his fantasy life are less important than the other 50% . […]"

D&D TEXT GENERATION

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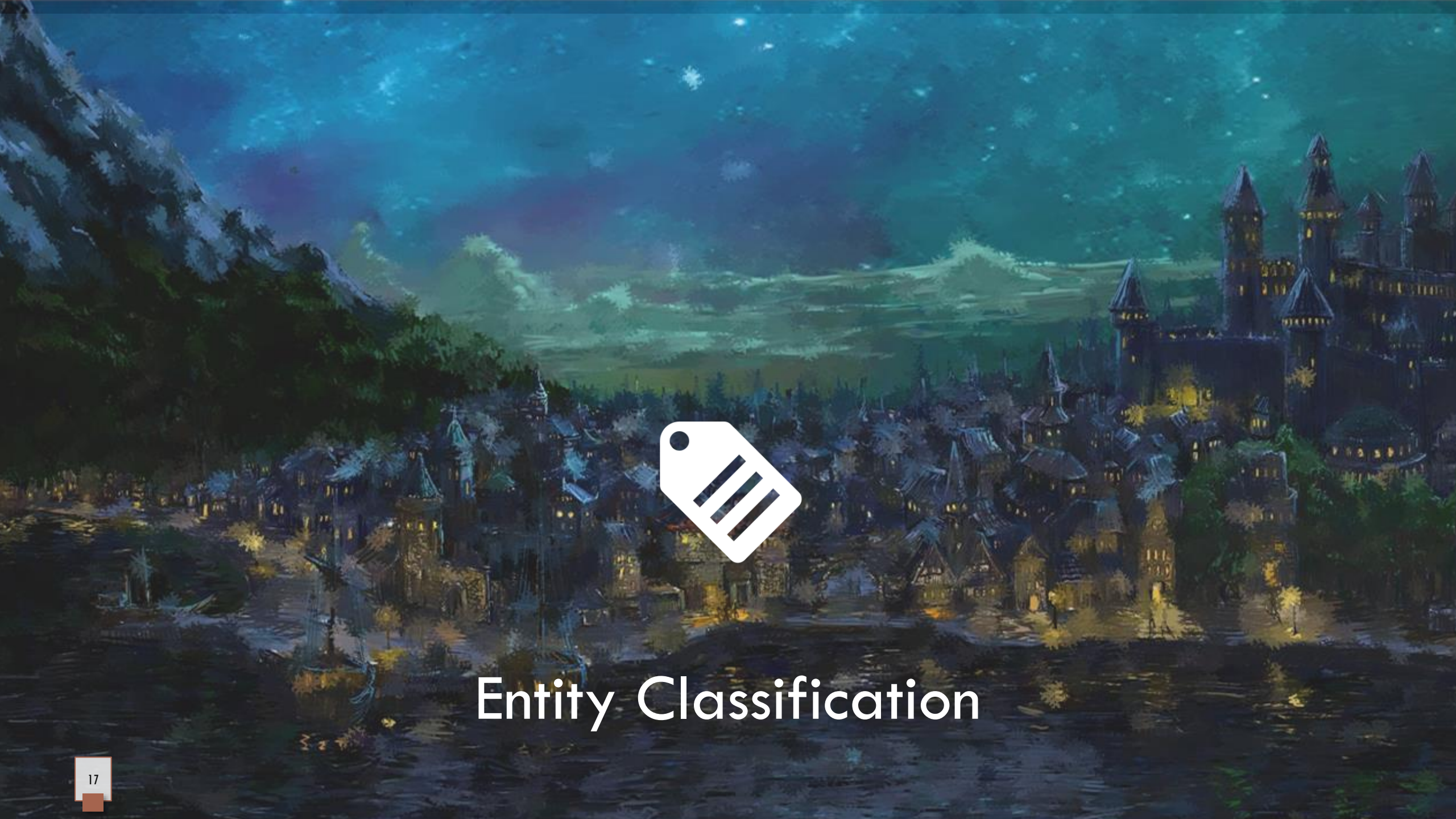

Entity Classification

ENTITY CLASSIFICATION

- Entities in Generated Text
  - In Forgotten Realms lore
- FRW-I dataset
- Entity, Label, Generated text

CONTENT

References

REFERENCES

[1] A. Radford, K. Narasimhan, T. Salimans, and I. Sutskever, “Improving language understanding by generative pre-training,” 2018
[2] T. Brown, B. Mann, N. Ryder, M. Subbiah, J. D. Kaplan, P. Dhariwal, A. Neelakantan, P. Shyam, G. Sastry, A. Askell et al., “Language models are few-shot learners,” Advances in neural information processing systems, vol. 33, pp. 1877–1901, 2020
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THANK YOU!

MAKE A PERSUASION CHECK TO ASK A QUESTION

LET THE DICE DECIDE!