

A dramatic fantasy illustration. A large, dark red dragon with glowing orange eyes and a wide, toothy mouth is breathing a powerful stream of fire. The fire is bright orange and yellow, filling the right side of the frame. In the foreground, a knight in full plate armor, including a helmet with a visor, stands on a rocky ledge. The knight is holding a sword and a shield, facing the dragon. The background is a hazy, rocky landscape. The overall tone is epic and intense.

DUNGEONS & DRAGONS FANTASY ADVENTURE GENERATION

TEXT GENERATION

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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

The screenshot shows the 'Wizard' article on the Forgotten Realms Wiki. The page has a gold and brown theme. At the top, there's a navigation bar with 'EXPLORE', 'PORTALS', 'MEDIA', 'HELP', and 'COMMUNITY'. A search bar and a page count of '40,244 PAGES' are also visible. The article title 'Wizard' is at the top left, with a blue 'EDIT' button. Below the title, there's a paragraph of text about wizards, with a green box highlighting the word 'spellcaster'. To the right of the text is a large image of a wizard in a blue robe, with a red box around it. Below the image is a table titled 'Various depictions of wizards.' with columns for 'Wizard (Mage, Magic-User)', 'Abbreviation', 'Class Statistics', '5th Edition Statistics', 'Base Class', 'Arcane Traditions', 'Weapons', 'Proficiencies', 'Magic type', and 'Spell preparation'. The table lists various abilities and traditions. At the bottom right, there's a 'Popular Pages' section with links to 'Asmodeus', 'Aasimar', 'Mind flayer', 'Bahamut', and 'Selûne'. The footer contains links for 'FandomShop', 'Newsletter', 'Join Fan Lab', and a 'Bingebot' notice.

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) |

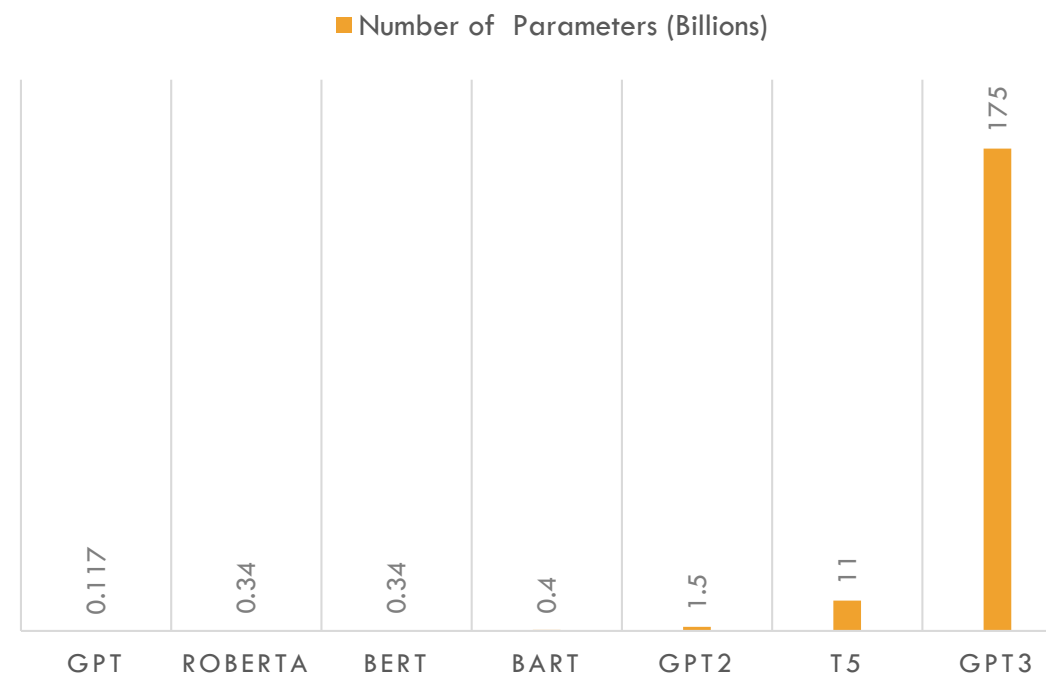


GPT Models

GENERATIVE PRE-TRAINED TRANSFORMERS (GPT)

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

SIZE COMPARISON OF EXISTING PRE-TRAINED LANGUAGE MODELS



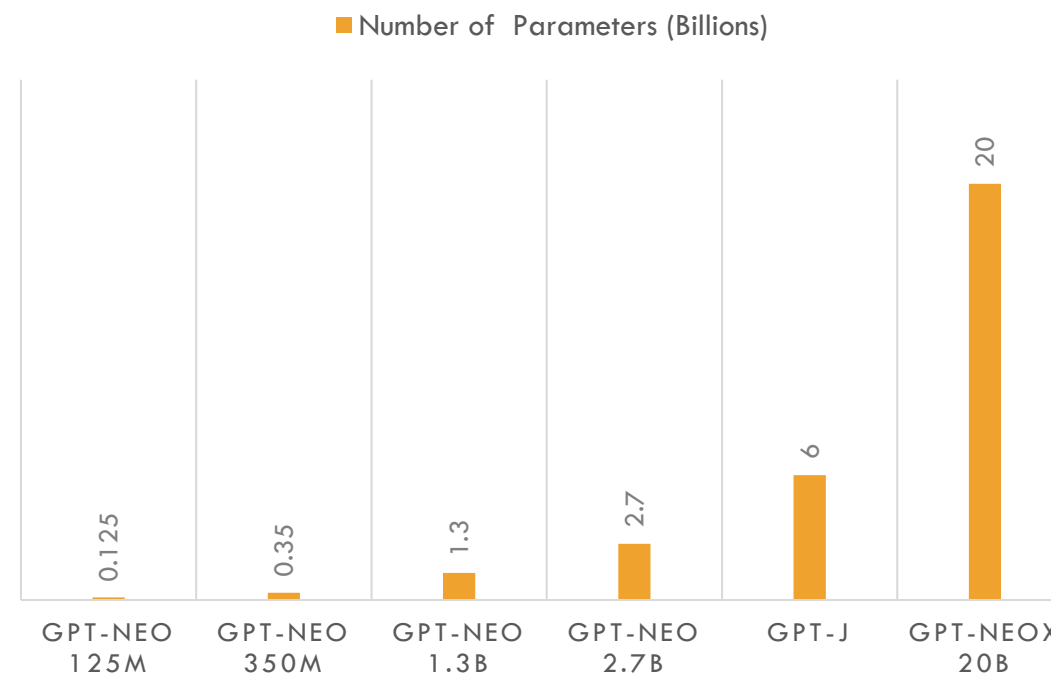
[1] A. Radford, K. Narasimhan, T. Salimans, and I. Sutskever, "Improving language understanding by generative pre-training," 2018

[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)

SIZE COMPARISON OF ELEUTHERAI'S OPEN
SOURCE GPT NEO AND NEOX MOELS

- 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>

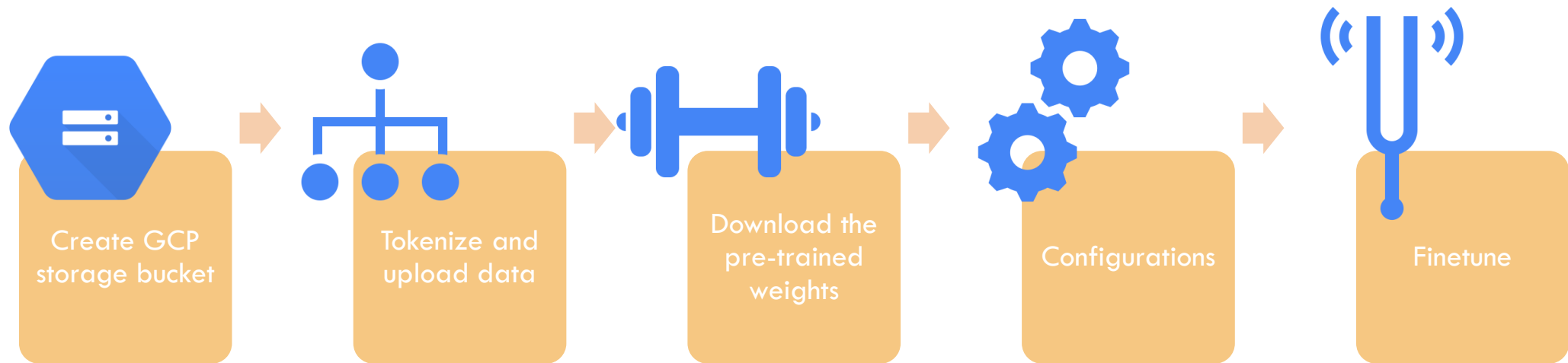
[5] A. Andonian, Q. Anthony, S. Biderman, S. Black, P. Gali, L. Gao, E. Hallahan, J. Levy-Kramer, C. Leahy, L. Nestler, K. Parker, M. Pieler, S. Purohit, T. Songz, P. Wang, and S. Weinbach, "GPT-NeoX: Large scale autoregressive language modeling in pytorch," 2021. [Online]. Available: <http://github.com/eleutherai/gpt-neox>



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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- [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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THANK YOU!

MAKE A PERSUASION
CHECK TO ASK A
QUESTION



LET THE DICE DECIDE!