Project Variegata

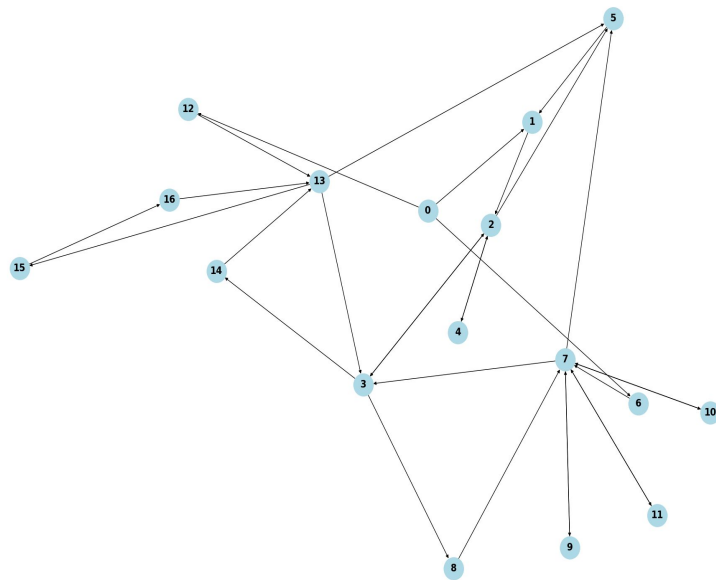Procedural Story Generation

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Project Goals

Generate story outlines based on seed text.

Make creating narratives easier for game designers.

Explore ways to generate text structure, rather than specific content

How It Works

- Scrape the internet for existing stories/text.

- Break "events" down into sets of keywords.

- Create a graph to connect keywords.

- Train a model.

- Give this model a new set of keywords, get a series of events back.

Scraper

Automatically walk through text adventures on chooseyourstory.com.

Generate keywords for each event (more on this later).

Save each story to a file to be processed later.

Escape!

You wake up for the first time to find yourself trapped inside a hard shell. You need to escape.

- Scratch at the Shell
- Stretch
- Ram Head into shell

Story Graphs

Create a node for each event.

Add edges between events that are connected.

Allows us to see the structure of each story.

0. Hello, adventurer! It seems that some random village has been beset by that big ol' beastie pictured over there. Cute, isn't he? Of course, being the hero that you are, it's obviously your duty to fight it. So, what are you waiting for? First off, you'll have to select your job. Your job affects what abilities you have.

1. Excellent choice! You charge off to beat up the Behemoth...

2. Sword in hand, you stand in a ready stance. The Behemoth growls.

3. You attack the Behemoth. It swings a massive claw at you. Ouch.

4. You leap forward, slashing twice at the Behemoth. The Behemoth counters with a mighty blow.

5. Your health is... well... how much health you have. If it drops below zero, it's game over. Don't worry, it's not going to stay at 1. Since different jobs will have different amounts of health, you'll get the rest of your health after you click the link to begin the fight. The variable entitled Behemoth is how much health your foe has. You want this to drop to zero. Mana is required to use certain skills. Once it drops to zero... well, it's not game over, but you won't be able to use some skills. Once again, you'll get the rest of your mana after you begin the fight. Your Drivemeter will raise as you perform actions. Once it reaches ten, you will be able to perform an Overdrive attack. The Overdrive varies with each job.

6. Excellent choice! You charge off to zap, burninate or freeze the Behemoth (depending on your mood)...

7. Staff in hand, you stand in a ready stance. The Behemoth snarls.

8. You cast Fire at the Behemoth. It responds with Thunder.

9. You cast Thunder. Unfortunately, this Behemoth absorbs lightning. So, basically, you've just healed him. It grins infuriatingly at you.

10. You cast Blizzard. Shivering, the Behemoth counters with Thunder.

11. You cast Cure, and restore some of your health.

12. Excellent choice! You charge off to beat up the Behemoth... but not before snatching these items.

13. You stand, daggers at the ready. The Behemoth bares its teeth at you.

14. You examine the Behemoth closely... very closely. You determine that you have approximately a 1 in 3 chance of successfully stealing an item from it, and that using a lightning-based attack will simply heal the monster. You also determine that the Behemoth is allergic to Scan by experience when it lets out a mighty sneeze in your direction. Although it doesn't do that much damage, it's still pretty annoying.

15. You attempt to steal from the Behemoth...

16. Your attempt is unsuccessful. The Behemoth, a wee bit irked at you, casts Thunder.
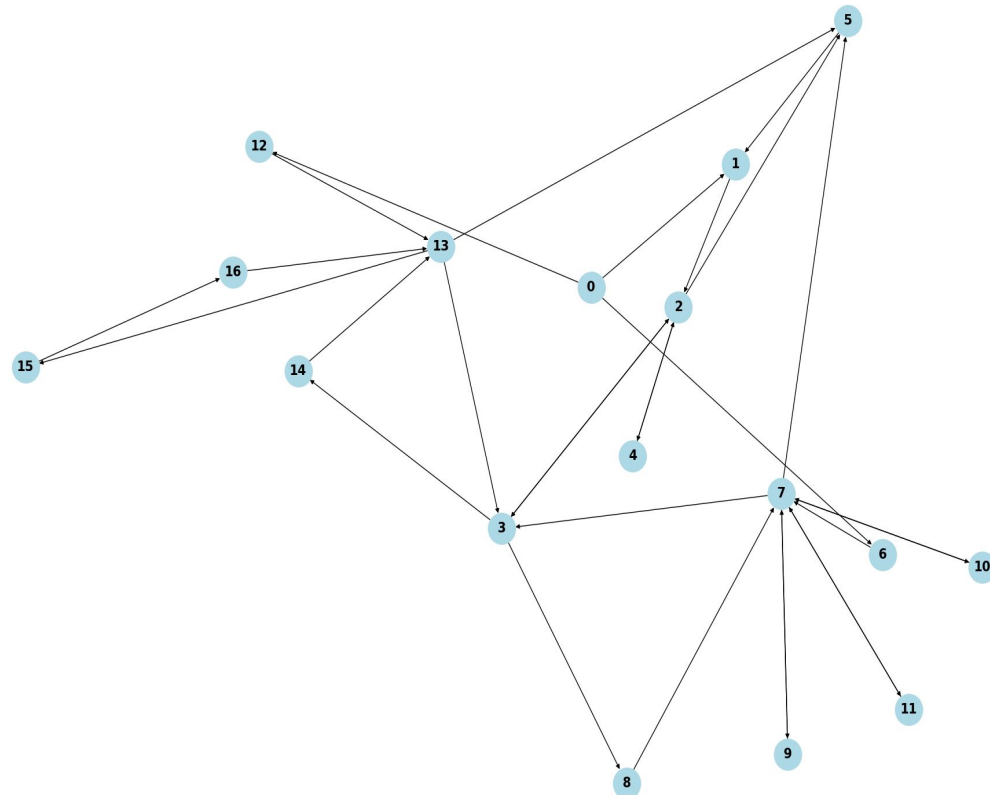
Keyword Extraction

Reduce an event down into a few keywords.

Uses the TextRank algorithm (similar to Google's PageRank).

"Hello, adventurer! It seems that some random village has been beset by that big ol' beastie pictured over there. Cute, isn't he? Of course, being the hero that you are, it's obviously your duty to fight it. So, what are you waiting for? First off, you'll have to select your job. Your job affects what abilities you have."
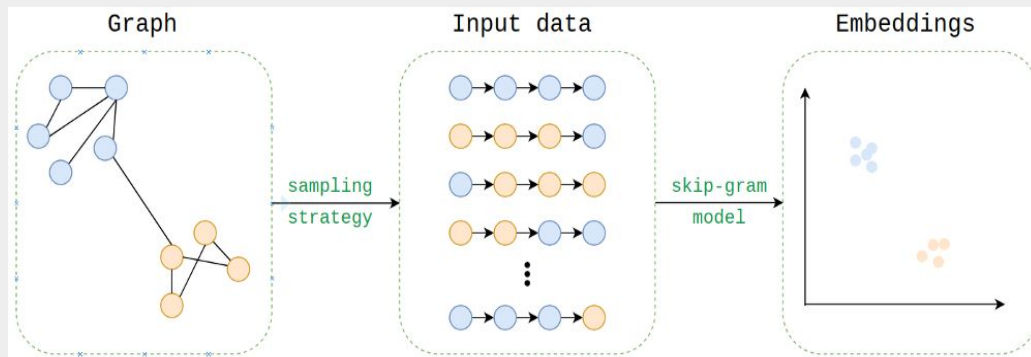
[adventurer, village, hero, fight, abilities]

The Model

Combine all of the story graphs and feed it to the node2vec algorithm.

node2vec walks through the graph and determines probability of each transition.

Trained model will tell us what nodes are most probable given current node.

https://towardsdatascience.com/node2vec-embeddings-for-graph-data-32a866340fef

Generating from Keywords

Can now generate a series of keywords to form into a "story".

adventure ⟶ wizard ⟶ mana ⟶ spell ⟶ cast

Search Engine

Basic search engine to query events using keywords.

Uses TF-IDF.

"adventure"

↓

Search Engine

↓

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Thank You!

Read more about the project:

https://projectvariegata.com

Check out the source code:

https://github.com/mkstowe/variegata