

A2: Rule Based Systems (Mad-Libs Story Generator)

Feb 13th, 2025

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IAT 460

Github Link: https://github.com/losmontoyaa/IAT460_A2_StoryGen_CMontoya/tree/main

Creative Statement

For Assignment 2, I opted to create a procedural story generator utilizing a generative grammar system. When Griffin first introduced generative grammar systems during the lab, they immediately reminded me of these books we used to have in elementary school called *Mad-Libs* books. They were a series of children's books which feature a skeleton outline of a story with key-elements like adjectives and characters being replaced by fill-in-the-blanks for kids to write in their own story elements often to humorous and contradicting results. I thought generative grammar systems embody that spirit quite well, and I thought I could use *Mad-Libs* as the inspiration for the assignment in order to give whatever story is being generated a solid structure and story format, while also allowing for multiple variations of the story.

Overall, I think the system did a pretty good job at replicating the style of those books in all of it's weird glory. However, I'm conflicted on whether or not I've cheated the system somehow by providing the system with an outline rather than having it generate something completely from scratch. That being said, this system could be infinitely scalable with different scenarios and story skeletons for the system to be filled out, so I think it still has some merit. Further, I'm satisfied with the amount of grammar sets that were developed for the assignment as it allowed each variation to truly feel like a new take on the story. If I were to improve it, I would likely add less generic story skeletons and even more options for each blank that can be filled in as I think it would make the resulting stories even more interesting and enjoyable to read through.

Technical Documentation

In order to accomplish a coherent story that reflected my creative intent with the assignment, I kept the initial 'STORY' production rules on the simple side with the bare minimum parts of a story: a beginning, middle and end with line breaks in between to maintain a proper format. To introduce variations and different rulesets, I implemented and crafted two *Mad-lib* story skeletons for each part of the story ruleset with the portions needing to be filled being replaced by the non-terminal symbols for what would be placed in each. In my drafts, these looked like this:

BEGINNING A

Once upon a time in a + ADJ + SETTING + lived a + ADJ + NOUN + named + CHAR. CHAR + VERB_PAST + NOUN_PLURAL + and + PRONOUN + was known for being + EMOTION.

MIDDLE B

Today was a + EMOTION + day, because + CHAR + was going to do their favourite thing in the whole world! + ACTIVITY + ! It was a long standing tradition in + CHAR + 's family, and + PRONOUN + was + EMOTION + to start! Suddenly, + PLOTPOINT + which turned the day from crazy, to CRAZIER. CHAR + could hardly believe that + PLOTPOINT + stating + DIALOGUE + .

By mixing terminal symbols with non-terminal symbols, I was able to give the story appropriate structure, while still allowing the system to make random choices for key parts of the story. The main challenge I faced when getting these to work was that I had to ensure that key story elements like characters, settings and plot points remained consistent throughout all story parts without being regenerated every instance by the system, while also allowing the system the freedom to maintain its randomness for all grammar sets. To solve the issue, when defining the grammar sets that required consistency, the system initially defines them as empty and has external list variables house all the different options each of these sets can have. The system then randomly picks a single option for each set and adds it to the set using a dedicated function (eg: only ONE character name gets added to the CHARACTER set in story_grammar). That way, when the system generates a story using these sets it will only have one option to choose from and will always pick it, but all options have still been randomly generated from a list in the same manner.

The system isn't perfect however, having the right tenses for every situation was difficult to manage for plot points especially due to their relative complexity to single word or dialogue responses. This led to some grammatical inconsistencies and errors, but despite this, the system worked decently well!

Sample Outputs

Everytime the code is run, the system utilizes the grammar sets

Story 1:

Once upon a time in a graceful kingdom lived a cynical dog named Doechee. Doechee bullied bananas and they were known for being inspired.

Doechee decided that today they were going to rob a bank. They have been wanting to rob a bank for days and today was finally the day. "here I go!" Doechee groaned quickly as they went out the door of their house peaceful to finally rob a bank when all of a sudden, a meteor strike!

Thankfully, a meteor strike is a regular thing in the kingdom Doechee calls home. No big deal! Doechee just continued their day as normal and was able to rob a bank. At the end of the day, Doechee returned to their house and lived happily ever after.

Story 2:

There once was a grim dragon called Jacob who lived in a gloomy treehouse in the middle of a dreary town. "YIKES!" Jacob muttered as they started their day.

Jacob decided that today they were going to finish this assignment. They have been wanting to finish this assignment for years and today was finally the day. "here I go!" Jacob proclaimed reluctantly as they went out the door of their treehouse lonely to finally finish this assignment when all of a sudden, a hitman attempts to take them out!

In the ensuing chaos, Jacob sadly passed away, leaving their home and their loved ones behind. Their final words were "YIKES!" Jacob left everything they owned to the monster down the street. The end.

Story 3:

Once upon a time in a resilient ocean lived a dazzling bear named Nicki. Nicki loved animals and they were known for being hopeful.

Today was a anxious day, because Nicki was going to do their favourite thing in the whole world! write a novel! It was a long standing tradition in Nicki's family and they were embarrassed to start! Suddenly, a hitman attempts to take them out which turned the day from crazy, to CRAZIER. Nicki could hardly believe that a hitman attempts to take them out stating "Im walkin here!"

Thankfully, a hitman attempts to take them out is a regular thing in the ocean Nicki calls home. No big deal! Nicki just continued their day as normal and was able to write a novel . At the end of the day, Nicki returned to their apartment and lived happily ever after.

Story 4:

Once upon a time in a majestic forest lived a harsh bear named Phoebe . Phoebe embraced flowers and they were known for being joyful .

Phoebe decided that today they were going to write a novel . They have been wanting to writing a novel for days and today was finally the day. "oh boy!" Phoebe declared carefully as they went out the door of their cave lonely to finally write a novel when all of a sudden, a sinkhole opening at their feet !

Thankfully, a sinkhole opening at their feet is a regular thing in the forest Phoebe calls home. No big deal! Phoebe just continued their day as normal and was able to writing a novel . At the end of the day, Phoebe returned to their cave and lived happily ever after.

Story 5:

Once upon a time in a dreary city lived a menacing bear named Philippe . Philippe ignored children and they were known for being proud .

Philippe decided that today they were going to fly to the moon . They have been wanting to fly to the moon for millenia and today was finally the day. "oooooh Jerry, Im an AI Jerry." Philippe whined happily as they went out the door of their house anxious to finally fly to the moon when all of a sudden, a meteor strike !

Thankfully, a meteor strike is a regular thing in the city Philippe calls home. No big deal! Philippe just continued their day as normal and was able to fly to the moon . At the end of the day, Philippe returned to their house and lived happily ever after.