



Pokedex Entry Generator

Group 8

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About Us



- Asumi:
 - Senior undergraduate majoring in Biological Sciences. Has no machine learning experience
- Melina:
 - Senior undergraduate majoring in Computer Science with a concentration in Security and Privacy and a minor in Linguistics. Has little machine learning experience
- Anthony:
 - Senior undergraduate majoring in Mathematical Sciences with a creative writing minor. No prior experience in ML.

Pokedex entries

- Contain information regarding appearance or personality
- Can be presented in a cute, funny, or strange way
- Squirtle: “Its shell is not just for protection. Its rounded shape and the grooves on its surface minimize resistance in water, enabling Squirtle to swim at high speeds.”



Techniques/Challenges

- Trained GPT-2 on dataset of Pokedex entries
- Over 800 Pokemon
- Over 20 games
- Not every Pokemon is in every game
 - More entries related to older pokemon
 - Some entries are nearly identical across different games and in different languages
 - Total of roughly 6500 Pokedex entries



First Run

- Ran with 1000 epochs
- Samples output every 100 epochs

Best results:

- It only sleeps for 1.5 seconds in a bed.
- In battle, it throws eggs at high speed, with a sudden and shockingly high rate of success.
- Its body is covered by an electric charge that can melt up any solid surface.

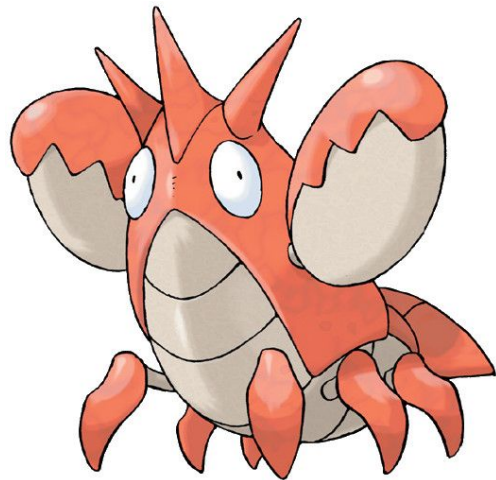


Overtraining

- Seen by the end of the 1000 epochs
- Has a repeat of multiple lines

Repeated this line three times:

- As a psychic act, it emits a strong magnetic force. If it gets out of control, the object in the object's vicinity is transformed into a magnet.



Shuffling of Dataset to Stop Overtraining

- Dataset originally had Pokedex entries grouped per Pokemon
- Shuffled using linux command
- At the end of 1000 epochs, did not overtrain

Best results:

- It lives in warm forests where its population is very low. When it spots a bug, it shoots it away.
- It is very weak. Its body is coated in a sticky film that makes it hard to move.

Generating a Caption from Pokemon Image

- Next step was to create a Pokedex entry using a prompt
- Used image_captioning notebook
- Gave images of Squirtle, Ivysaur and Charizard

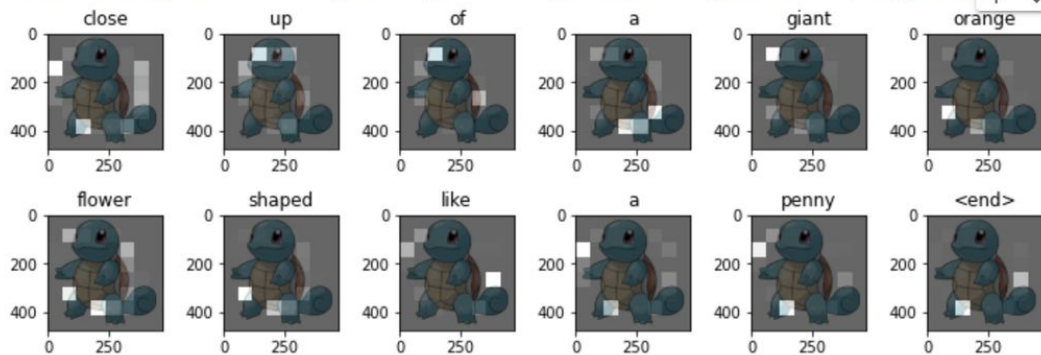


Squirtle Image Caption

Close up of a giant orange flower
shaped like a penny

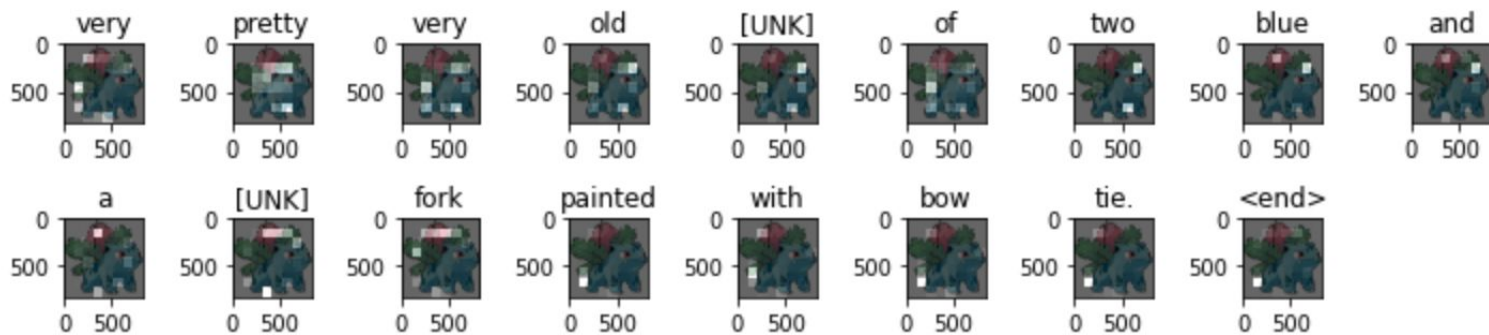


Prediction Caption: close up of a giant orange flower shaped like a penny <end> ↑ ↓



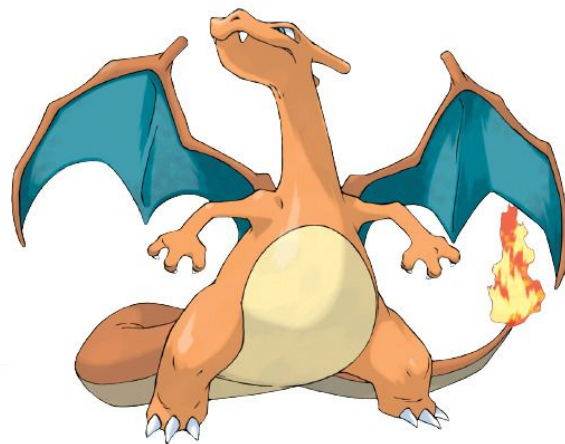
Ivysaur Image Caption

Very pretty very old [UNK] of two
blue and a [UNK] fork painted
with bow tie

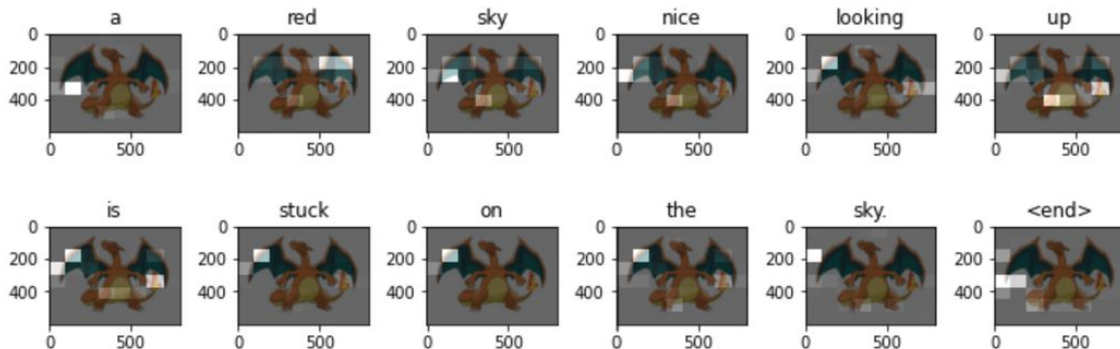


Charizard Image Caption

A red sky nice looking up is
stuck on the sky



Prediction Caption: a red sky nice looking up is stuck on the sky. <end>



Generated Descriptions

- Used each caption generated as prompt for trained model
- Used model after 800 epochs
- **Entry from Squirtle prompt:** The Pokemon vibrates its horn continuously to communicate with others of its kind.
- **Entry from Ivysaur prompt:** It lashes its sharp fangs on unsuspecting prey. It can run approximately 220 feet per minute.
- **Entry from Charizard prompt:** Born from dust, it doesn't ever fully evolve. Its body is covered in a sort of fur.

Changing temperature with Squirtle prompt

- Temperature = randomness
- This Pokemon is a giant orange flower shaped like a penny
- Used model after 1000 epochs
- Tried temperature values of 0.6, 0.8 and 1

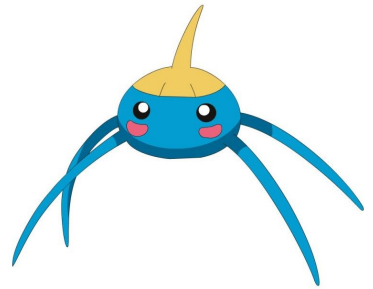


Generated Entry with 0.6 Temperature

- Most sentences would have similar beginnings
- It is said that when this Pokémon's eyes shine, it is the light of the entire world.
- It's said that if it senses a strong wind, it will take off running, and that's how it gets its wings.
- It is a legendary bird Pokémon that has been living in the wild since ancient times.

Generated Entry with 1 Temperature

- Would make entry not related to prompt
- It fluctuates in temperature and pressure.
- In the night, it will sing loudly but may cry only in loud singing. It does this all the time.



Generated Entry with 0.8 Temperature

- Created entries that built off of original prompt
- As it drifts about, it blooms in a dazzling shower of sparks.
- It is said that the flower glows when angered. However, it is different from other POKÉMON because of its incredibly aggressive nature.

Best Results

Without prompt:

- It only sleeps for 1.5 seconds in a bed.
- In battle, it throws eggs at high speed, with a sudden and shockingly high rate of success.
- Its body is covered by an electric charge that can melt up any solid surface.



Best Results



With prompt:

- It is said that the flower glows when angered. However, it is different from other POKÉMON because of its incredibly aggressive nature.
- This Pokémon appears from the frozen wastes of a frozen desert. It flares and spews fire of more than 200 degrees Fahrenheit.
- It sweats cold air with its awesome sprout's plant roots. When night falls, the weeds that have grown around it become healthier.

Conclusions

- Generated entries can become Pokedex entries
- Difficulties:
 - Optimize dataset
 - Determining correct epoch number for model
 - Temperature value
- In the future can generate images based on the entries, and create stats, type and name

