cpt_s 540 Artificial Intelligence

Homework 12

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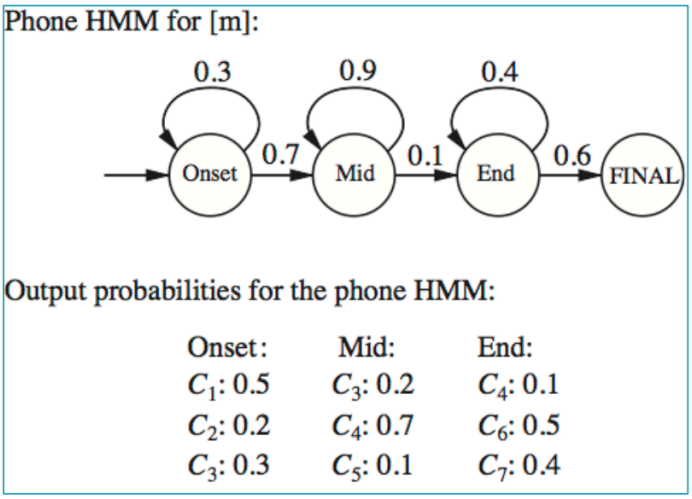
2020/12/8

1. Hidden Markov Model:

   Given a sequence: C_1, C_2, C_4, C_4, C_6



   a. Onset, Onset, Mid, Mid, End

      (0.5)*[(0.3)*(0.2)]*[(0.7)*(0.7)]*[(0.9)*(0.7)]*[(0.1)*(0.5)]*(0.6) = 2.778×10^{-4}

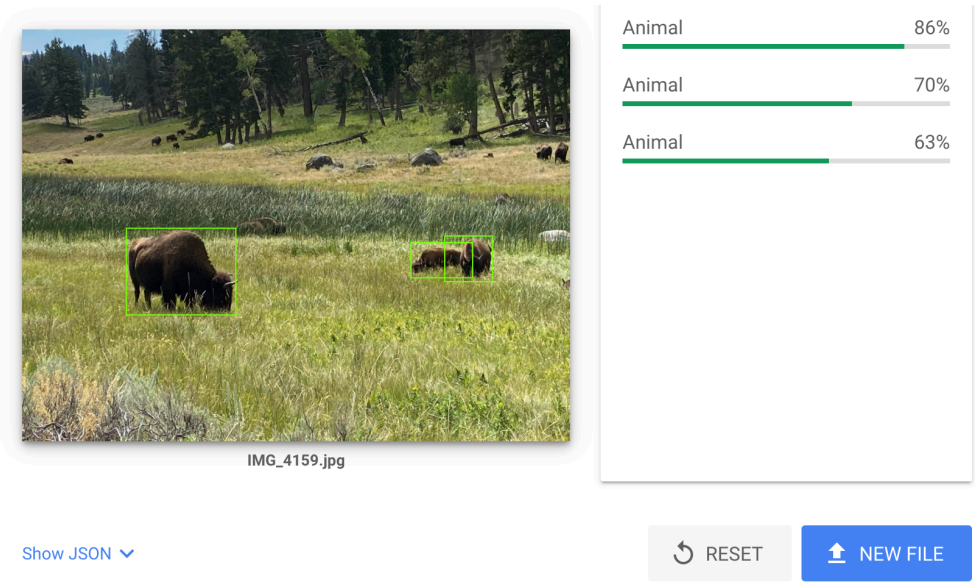
   b. Onset, Onset, Mid, End, End

      (0.5)*[(0.3)*(0.2)]*[(0.7)*(0.7)]*[(0.1)*(0.1)]*[(0.4)*(0.5)]*(0.6) = 1.764×10^{-5}

As a result, 'a' has the highest probability, so it is the most likely explanation of features.

2. Picture identification(Google):

   The picture is taken in Yellowstone national park and animals in it are bisons.

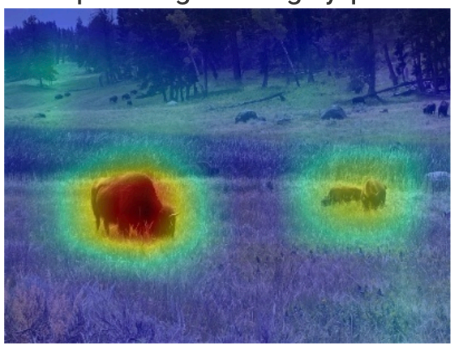


   It identified three nearest bisons successfully, but there were more animals far away that were not recognized.

3. Picture identification(MIT):

Predictions:

- **Type of environment:** outdoor
- **Scene categories:** pasture (0.365), hayfield (0.243), field/wild (0.177), farm (0.136)
- **Scene attributes:** open area, natural, natural light, vegetation, camping, grass, sunny, foliage, hiking
- **Informative region for predicting the category *pasture* is:**



   All attributes and the predicting category are correct! However, so far, neither Google nor MIT picture identification are able to recognize bisons.

4. Artificial intelligence ethical issues:

In the video the professor played in the class, it used visual technology to replace the face of the actor, which has brought many conveniences to human beings. For example, in the famous movie Furious 7, since one of the actor died in a car accident, the director asked his brother to shoot the remaining shots. Later, this technology was used to copy the actor’s face to his brother's face, so that the movie was completed and released smoothly. However, under the same technology, people can also use it to do bad things. For instance, people use this technology on inappropriate films, which causes trouble in other people's lives. Therefore, the ethical of users is very important, because their purpose will affect whether the technology brings advantages or disadvantages. First, users must confirm that their purpose does not harm others. Furthermore, the use of other people's portraits must obtain their consent. In this way, we can be sure that the technology will not be used in inappropriate places.