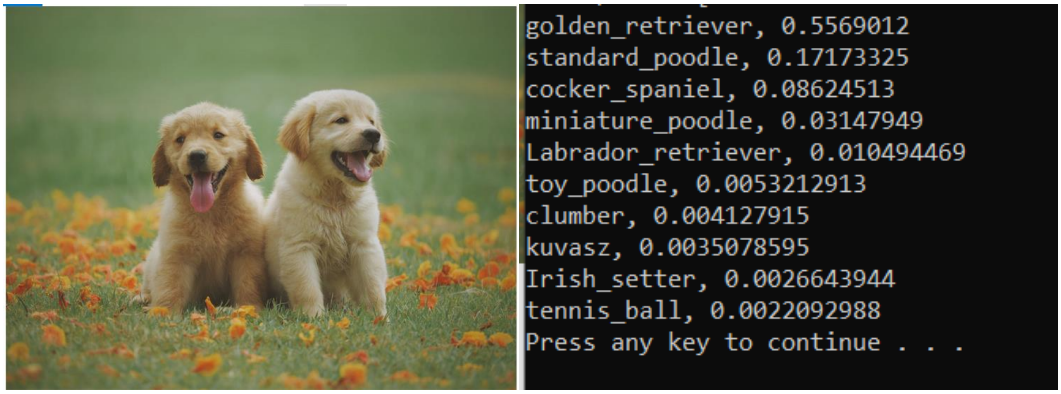
CptS 540 Artificial Intelligence
HW12
Jinyang Ruan
011696096

1. There are two possible paths through the HMM: Onset, Mid, Mid, End, Final and Onset, Mid, End, End, Final. Below are the probabilities of each path.

$$P(Onset, Mid, Mid, End, Final)$$
$$= P(C1|Onset) * P(Mid|Onset) * P(C4|Mid) * P(Mid|Mid) * P(C4|Mid) * P(End|Mid) * P(C7|End) * P(Final|End)$$
$$= 0.5 * 0.7 * 0.7 * 0.9 * 0.7 * 0.1 * 0.4 * 0.6$$
$$= 0.0037044$$

$$P(Onset, Mid, End, End, Final)$$
$$= P(C1|Onset) * P(Mid|Onset) * P(C4|Mid) * P(End|Mid) * P(C4|End) * P(End|End) * P(C7|End) * P(Final|End)$$
$$= 0.5 * 0.7 * 0.7 * 0.1 * 0.1 * 0.4 * 0.4 * 0.6$$
$$= 0.0002352$$

The first path is more likely.

2. 

Basically, there are two dogs in the image, InceptionResNetV2 successfully detected them and breeds. I also expect it can detect flowers and grass, but it did not, and the last result is tennis ball which is not in the image.

3. https://jamanetwork.com/journals/jama/article-abstract/2756196?casa_token=36bk8Wgp8oEAAAAA:SPwP_aCrlOWU8fpBcKOMx3XZF0T24vQL5Iv71lqIMlpTx1yrJ_Gj-Ygopz8YVq9MsnOxbQilfxY

Parikh RB, Teeple S, Navathe AS. Addressing Bias in Artificial Intelligence in Health Care. *JAMA.* 2019;322(24):2377–2378. doi:10.1001/jama.2019.18058

Bias in AI usually caused by missing data or algorithm training sample is biased. In the field of health care, since AI relies on the historical data which are based on biased data

generation or clinical practices, it may create or perpetuate worsen biases. The biased data may be caused by the inequity care delivery or social bias. Bias in AI would cause ethical issues. For example, AI may underestimate the diagnosis of the disease of certain people which are not able to accept health care service.