**System Design: Big Data Applications**

**What kind of data do you want to extract?**

I would want to primarily extract GPS data. I would also want to setup video cameras around the island to extract video footage for the purposes of setting up activity classification automation so that the employees would not have to watch endless hours of video. The GPS data would be the first data point logged for most events as it could help determine the question of where, as well as the frequency of a chimp’s activities.

**How to collect such data?**

In order to extract the GPS data, I would place one ankle bracelet with a GPS locator on each of the six chimps. As for the video footage, cameras would need to be placed throughout the island in order to provide enough solid angles so that a pattern can be distinguished when a chimp is performing a specific activity.

**How big data analytics can uncover the unexpected in your data?**

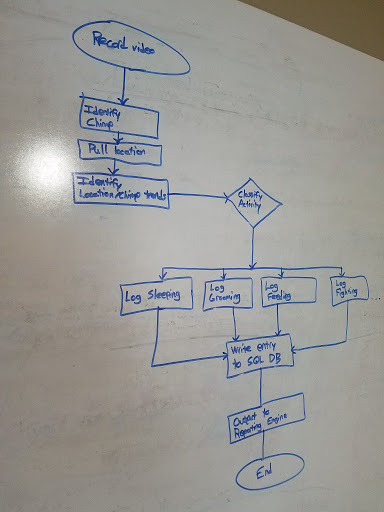
By using big data analytics, a neural network can be devised from the combination of GPS data and video footage to more efficiently determine what each individual chimp does throughout the day. By leveraging this automation instead of employees manually looking at video feeds, more chimpanzee behavior can be understood and might possibly lead to unexpected results concerning overall chimp behavior. One of the strengths of big data analytics is in its ability to predict results and create learning models that may even differentiate from manual models used in the past.

**How does the learning improve your system?**

In this example, by seeing which motions the chimpanzees use for certain tasks (i.e. feeding vs grooming), we can classify the video footage accordingly. With a greater amount of inputs, the system will become more and more accurate and able to distinguish between the more closely-related, from a motion perspective, activities. For example, at first the system might easily tell the difference between sleeping and fighting, but also have a hard time distinguishing grooming from playing. As more results continuously feed into the neural network, patterns emerge that allow for that separation in classification to become more apparent, especially when combined with the GPS data associated to each chimp and that chimp’s individual patterns.

**Draw the workflow of the proposed system and explain the process of the system.**

See Below

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