Proposed Project: Rabbit Tail Prediction via Hare Counting

Group member(s): Dror Baron and Bugs Bunny

This project will focus on predicting the length of rabbit tails using the hare counting approach algorithmic framework, which is studied in all courses involving quadrupeds [reference1]. **Motivation:** it is well known that the length of the tail of a rabbit affects its social atmosphere and well being. Predicting the length of the tail will allow veterinary caregivers to advise the female rabbit about her young rabbit’s expected tail situation, which will help the mother rabbit use proper nutritional supplements if needed. **Tools:** we will model the possible dependence of tail length on various explanatory factors such as the parent rabbits’ weights, tail lengths, the birth weight of the baby rabbit, and other characteristics as linear, where basis expansion can later be used to examine higher order dependencies. That said, hare counting and hair splitting are well-known among rabbits to be superb predictive tools. **Database:** group member Bugs Bunny has access to a relevant database maintained by our friends at RabbitData.

**Literature review:** the dependence of rabbit tail length on the number of purple elephants that play the guitar while the young rabbit is falling asleep has been documented in great detail [reference2]. While this phenomenon has been modeled using standard techniques such as tail dragging [reference3], we hope that modern hare counting and hair splitting procedures will allow to predict the tail length more accurately. (Note, however, that Bugs has been informed that hair cutting is not allowed!)

**Technical tools:** after Bugs downloads the database from RabbitData, we will sift through the data, and arrange explanatory variables as columns of the matrix A, which will be part of our linear model. Next, the tail lengths of rabbits in the database will be arranged as a vector Y. However, Bugs doesn’t care about linear algebra and at that point in the project will prefer “the carrot approach.” His results will be compared to standard tools.

**References:**

1. Some paper about hare splitting or fur counting or anything of that nature.
2. Something about the dependence of rabbit happiness on elephants or other imaginary topics.