

Honey Bee Language Dance Translator

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A valuable component in the study of honey bees is their unique communication method known as the waggle dance. This dance involves the bee running in a figure-eight pattern while wagging their abdomen and producing a buzzing sound in order to communicate the location of a food source to fellow bees. The length of this dance and its angle relative to the current position of the sun communicate the direction and distance of the food source respectively. The objective of this project was to develop an application to interpret the waggle dances of the bees present in the Museum's colony.

The outcome of the project was a web app consisting of two parts: the backend component for gathering and processing bee videos, and the frontend component for displaying the results. The backend component includes a script for remotely controlling a webcam in order to gather and save video files of the hive. The video processing component is based on code developed at the University of London which follows the following processing steps: conversion to grayscale, filtering, background subtraction, thresholding, and tracking and clustering to detect waggle dances present in the input videos. Video clips of these waggle dances are saved and sent to the frontend component. The frontend component displays the clips in a list alongside processing data such as video record dates. The frontend also includes general information about honey bees and a visualizer tool for understanding how the waggle dance works.

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