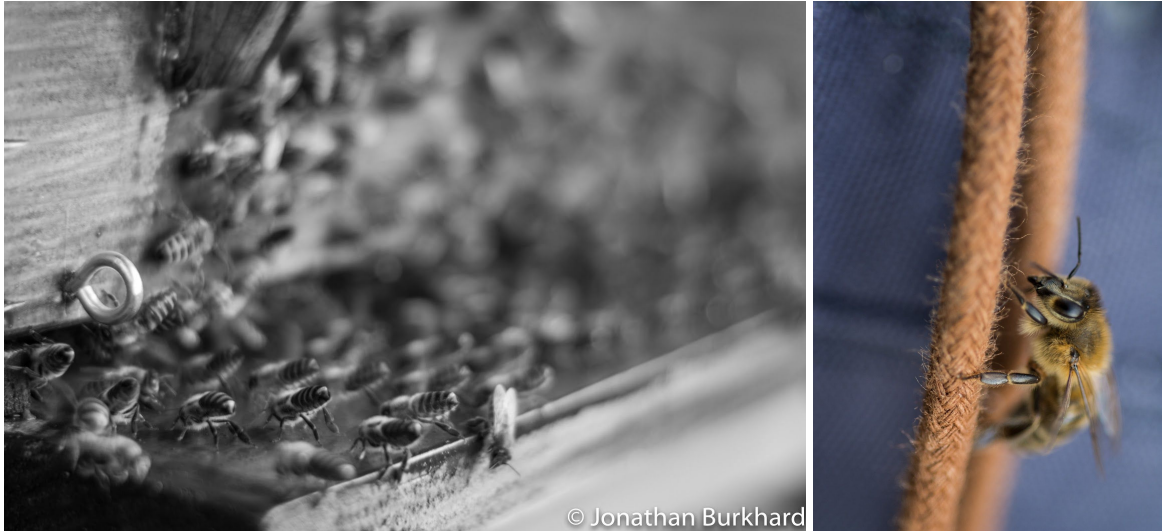


Beehive Traffic



Description:

One problem that a beekeeper can encounter in spring, is the sudden swarming of his bees. They do so to find a new location for their colony.

In this project we want to count the number of bees that enter and leave the hive at any particular time, in order to develop a system which can detect the possibility of a swarming.

Goal: The goal of the project is to be able to automatically count the number of bees entering and leaving a hive using a single camera and applying an appropriate image processing algorithm to the video.

Method: In order to achieve this we will attach a camera, preferably a GoPro, to the hive and take several videos of the hive entrance. In order to count the incoming and leaving bees we will implement a tracking system, using background subtraction and segmentation with ellipse fitting.

Tools: Python, OpenCV, Colmap, GoPro, Hive, Bees

Planning:

Tasks	Responsibility	Starting date	Time period
Literature research	Everyone	Week 3	1 week
Get familiar with Python, OpenCV and Colmap	Everyone	Week 3	2 weeks
Find which hive we will use for the video Talk to people in Zürich	John	Week 4	1 week
Calibrate cameras <ul style="list-style-type: none"> - Frame to frame association - Mapping image to world 	Philipp, Julie	Week 4	2 weeks
Test installation: different positions of camera and paper for uniform background	John	Week 5	2 weeks
Background Subtraction	John	Week 6	1 week
Prepare slides	Everyone	Week 7	1 week
Midterm presentation	Everyone	Week 8	
Implement segmentation and tracking	Jasmin, Philipp	Week 8	2 weeks
Determine logic to count incoming and outgoing bees	Julie	Week 10	1 week
Write Report	Everyone	Week 12	2 weeks
Prepare slides for final presentation	Everyone	Week 13	1 week
Final Presentation	Everyone	Week 14	