

User Requirements

- User needs to obtain coordinates referring to rat position for the duration of the 2-hr video.
- User must be able to track rat position even with visual interference from glare.
- User wants batch processing for videos; this is not high priority.
- A GUI could be helpful, but it is not high priority.

System Requirements

- Program is written in Python and OpenCV.
- Can be ran through terminal with a parameter indicating the path of the video file.
- Program will iterate through video frames, subtracting pixels that do not change and examining the moving pixels within the diameter of the study area.
- The brightest red and green pixels will indicate LED lights on the rat's head.
- The video will be put through a filter to enhance the color if LEDs are not bright enough.
- The program will save the pixel coordinates into a CSV file.

Non-functional Requirements

- The code may become open source, so there must be in-depth documentation on functions so other people can contribute to the code.
- The code must be refined and at least complete the high-priority user requirements by early December 2014.
- There must be version control implemented.
- The code must be clean and robust.
- The runtime should be reasonable, \leq 10-15 minutes.