vTrack: Video tracking with openCV

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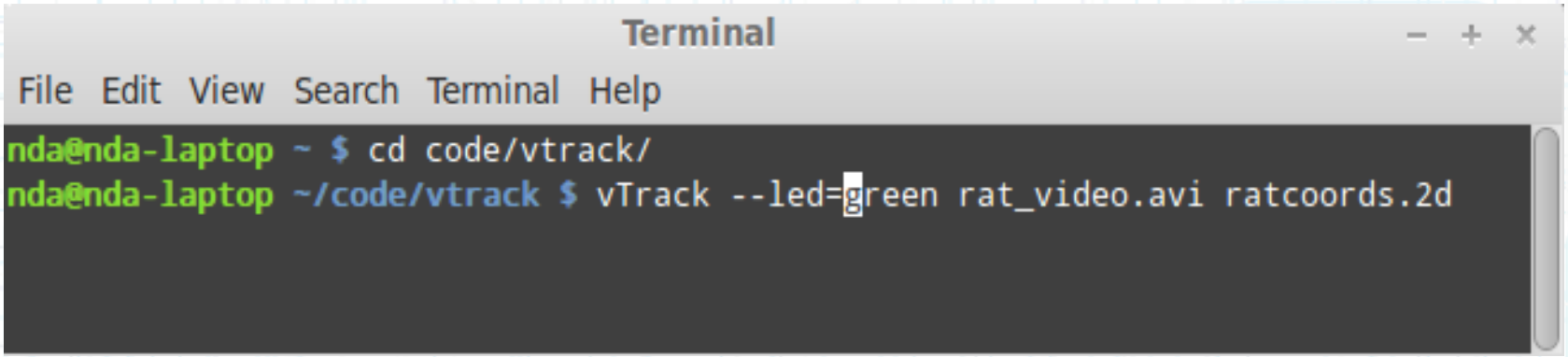
Purpose

- Studies on memory rely on tracking the movements and actions of rats
- New objects are introduced by a scientist, and the rat's memory is judged by how long it chooses to investigate them
- LED's are attached to the rat's head in some trials, but not all

Iteration 1

- Platform: Linux Only
- Interface: Command Line
- User options:
  - Video input filename
  - 2-D Coordinate Pixel output filename
  - Single frame image output filename, marked with LED pixel location
  - Video output filename, where each from is marked with LED pixel location

- Tracking method: Red, green, or blue LED
- >6x speed
  - 60 minute video analyzed in 10 minutes
- Cannot handle extremely large files (yet)



Iteration 2

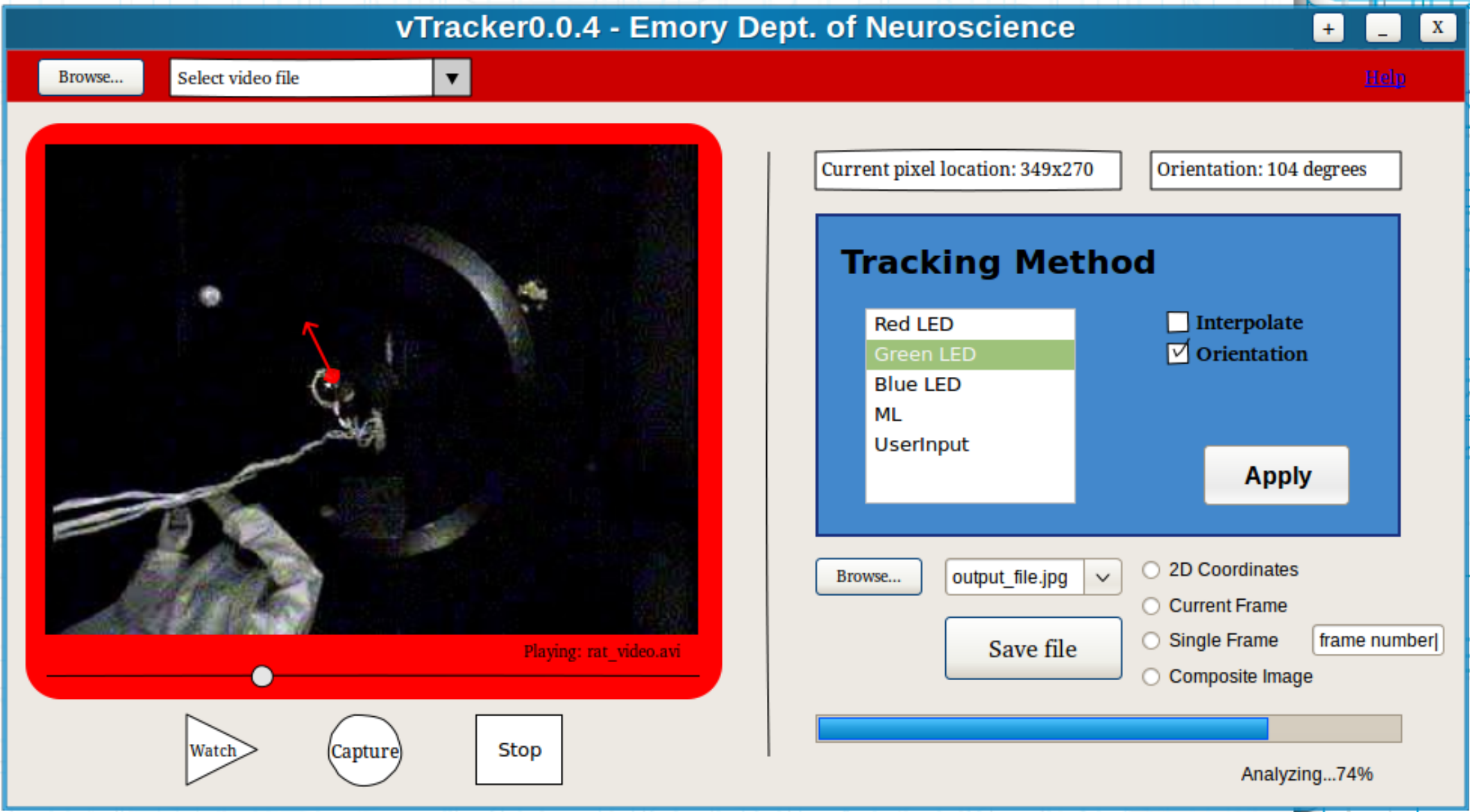
- Graphical Interface
  - Video playback
  - Real-time pixel tracking
- User options:
  - Composite image output filename
    - A “heat map” of pixel locations

Iteration 3

- User options:
  - Advanced Tracking Options
    - Machine Learning, User Input
- Determine animal orientation
- Windows compatibility

Iteration 4

- User options:
  - Even more selections for tracking method
- >10x speed
- MacOSX compatibility


vTracker0.0.4 - Emory Dept. of Neuroscience
+
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X
Browse...
Select video file
Help
Current pixel location: 349x270
Orientation: 104 degrees
Tracking Method
Red LED
Green LED
Blue LED
ML
UserInput
Interpolate
Orientation
Apply
Playing: rat_video.avi
Browse...
output_file.jpg
2D Coordinates
Current Frame
Single Frame
frame number
Composite Image
Save file
Watch
Capture
Stop
Analyzing...74%