For group activities, there are the following ones

|  |  |  |  |
| --- | --- | --- | --- |
| activity | code | Labels | color |
| Sleeping | S | 1 | green |
| Hanging out | H | 2 | yellow |
| Uncoordinated Movement | U | 3 | orange |
| Coordinated Pause | CP1 | 4 | gray |
| Coordinated Progression | CP2 | 5 | blue |
| Coordinated Non-progression | CNP | 6 | magenta |
| Startle | ST | 7 | red |
| Mixed | M | 8 | cyan |

For detailed description of the meaning of each activity, see below and see the examples.

Sleep: At the start of the day and the group are in one of their two sleeping locations, all animals are stationary with only low movement of GPS jitter, but no directed movement.

code: S

Example: Day 3 06:00-06:09

Hanging Out: Most animals in the group are stationary with low movement of the GPS jitter, but no directed movement. Some animals might move back and forth. But there is no overall group movement. The group centroid is relative stationary.

code: H

Examples: Day 3 06:25-07:24

Day 3 11:28-12:00

Coordinated Pause: During the movement, but when all of the group stops moving briefly or some subset of the group stops to wait for the rest of the group to join them.

Code: CP1

Example: Day 3 08:56-09:00

Coordinated Progression: when the group is moving in a consistent direction and one animal is behind another in a line. The coordinated progression starts when the first individual moves to initiate the progression. The end point is when the last member finished the progression.

Code: CP2

Examples: Day 1 09:34:30-09:54:30

Day 3 08:28:30-08:36:35

Coordinated non-Progression: the group is moving in a consistent direction, but individuals are not in a line. Each animal’s movement might be ‘stop and go’ but the group centroid continues to move forward steadily.

Code: CNP

Example: Day 3 12:40-13:00

Uncoordinated Movement: When the group centroid is more or less stationary, but the majority of group members are moving around the group (directed movement, not just jitter).

Example: Day 3 09:30-10:00

Code: U

Mixed: Only when the group split, subgroups are doing different activities.

Code: M

Startle: When the group is surprised by something, the behavior of the group suddenly changed. It happened very fast and abrupt.

Example

Examples: Day 7: 07:03-07:13

Day 1: 17:23-17:28

Code: ST

Group Split and merge

When the group have more than 1 smaller clusters rather than stay together as a whole group.

Code: GS, GM

GS is group split, GM is group merge

Examples: Day 3 08:46-08:56

Day 3: 15:00-15:20

The features used for group level activity recognition are the following

mean\_group\_speed\_x

mean\_group\_speed\_y

mean\_group\_speed

max\_group\_speed\_y

max\_group\_speed\_x

max\_group\_speed

min\_group\_speed\_x

min\_group\_speed\_y

min\_group\_speed

travel\_distance\_x

travel\_distance\_y

travel\_distance

mean\_group\_eccentricity

max\_group\_eccentricity

min\_group\_eccentricity

mean\_group\_tilt

max\_group\_tilt

min\_group\_tilt

mean\_group\_polarization

max\_group\_polarization

min\_group\_polarization

mean\_group\_odba

max\_group\_odba

min\_group\_odba



humanlabels\_day3.mat

humanlabels\_day4.mat

are the original labels for the activities for the four labelers? After taking the majority vote, some labels do not occur.

Under data for CRF and AST, it is the data for CRF and AST.

Under data for SSVM, it is the data for SSVM.

For SSVM, to download the code, it is under

<https://www.cs.cornell.edu/people/tj/svm_light/svm_hmm.html>

The commands are the following.

./svm\_hmm\_learn -c 5 -e 0.5 example7/declaration\_of\_independence.dat declaration.model   
 ./svm\_hmm\_classify example7/gettysburg\_address.dat declaration.model test.outtags

For CRF code, it is under

Use ant to build

to run

nohup java -cp ../lib/gurobi.jar:../lib/colt.jar:../lib/CRF.jar:../lib/CRF-Trove\_3.0.2.jar:../lib/LBFGS.jar:build:. iitb.Segment.MySegment train -f ../samples/us50.conf 1>output.txt 2>error.txt &

For AST code, it is under cleanAdversarial.

use ant to build

to run use

export LD\_LIBRARY\_PATH="$PWD":"$LD\_LIBRARY\_PATH"

export LD\_PRELOAD="libzerosum.so $LD\_PRELOAD"

nohup java -cp ../lib/gurobi.jar:../lib/colt.jar:../lib/CRF.jar:../lib/CRF-Trove\_3.0.2.jar:../lib/LBFGS.jar:build:. iitb.Segment.MySegment train -f ../samples/us50.conf 1>output.txt 2>error.txt &