**Smoothing sub functions**

Smooth trajectory before event detection phase by one of the following algorithms:

1. Moving average smoothing
2. Moving median smoothing
3. Savitzky-Golay smoothing

|  |  |  |  |
| --- | --- | --- | --- |
| Id | Name | Function | Settings |
| 1 | Moving average | movAvgFilt | x,  int fl – filter length (running window length in samples) |
| 2 | Moving median | medianFilt | x,  int fl – filter length (running window length in samples) |
| 3 | Savitzky-Golay | savGolFilt | x,  int fl – filter length (running window length in samples)  forder  dorder |
| … | … | … | … |
| N | mySuperSmoother | ExtFun = mySupSmthr | x,  ExtSettings = mySettings list |

**Detection sub functions**

1. IVT
2. IDT
3. AdaIDT

|  |  |  |  |
| --- | --- | --- | --- |
| Id | Name | Function | Settings |
| 1 | Identification by velocity threshold | IVT | t,  x,  y,  filterMarkers,  **settings =**  VT,  angular,  screenDist,  screenDim,  screenSize,  postProcess,  MaxTBetFix,  MaxDistBetFix,  minFixLen,  maxGapLen,  maxVel,  maxAccel,  classifyGaps |
| 2 | Identification by dispersion threshold | IDT | t,  x,  y,  filterMarkers, |
| 3 | Adaptive identification by dispersion threshold (by Nystrom & Holmqvist) | AdaIDT | t,  x,  y,  filterMarkers, |

**Event analysis sub functions**

Estimate the specified parameters of the following events:

1. Fixation parameters
2. Saccade parameters
3. Glissade parameters
4. Smooth pursuit parameters
5. Gap parameters
6. Artifact parameters
7. Additional events parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Id | Name | Function | Settings | applyToEvent |
| 1 | Fixation duration | fixDur | - | Fixation |
| 2 | Saccade amplitude (by positions) | sacAmpPos | angular, scrDim, scrSize, scrDist | Saccade |
| 3 | Saccade amplitude (by speed and time) | sacAmpSpT | angular, scrDim, scrSize, scrDist | Saccade |
| … | … | … | … | … |
| N | Blink duration | ExtFun = blDur | ExtSettings = mySettings list | Blink |

**Parameter estimation sub functions**

Estimate the specified parameters of objects of the following classes:

1. EyesData parameters
2. EventData parameters
   1. Fixation parameters
   2. Saccade parameters
   3. Glissade parameters
   4. Smooth pursuit parameters
   5. Gap parameters
   6. Artifact parameters
3. AOISequence parameters
4. AOITransMatrix parameters
5. AOIStatsVector parameters

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Id | Name | Function | Settings | applyToClass | applyToSlot |
| 1 | Trajectory total duration | trajDur | EyesData,  - | EyesData | L/R EyeSamples |
| 2 | Center of mass | trajCentOfMass | EyesData,  angular, scrDim, scrSize, scrDist | EyesData | L/R EyeSamples |
| 3 | Inner area of samples | trajInnerArea | EyesData,  - | EyesData | L/R EyeSamples |
| 4 | Min, max, mean, sd and range of pupil size | pupilSummary | EyesData,  averagePupilAxes | EyesData | L/R PupilSamples |
| Etc. |  |  |  |  |  |