Package 'Rbgs'

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Type Package

Title Reading and Background Subtraction in Videos

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Description Methods that allow video reading and loading in R. Also provides nine different methods for background subtraction.

Depends R (>= 3.2.4)

SystemRequirements Java JRE 1.6 or higher ; Xuggle-xuggler-5.4.jar in
library paths and class paths.

License GPL-2

LazyData TRUE

RoxygenNote 6.0.1

Imports rJava, imager,base,magrittr,graphics,stats

NeedsCompilation no

Repository CRAN

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R topics documented:

`admedian` *Adaptive meadian background subtraction algorithm*

Description

This function performs background subtraction on input grayscale frames using adaptive median background subtraction algorithm.The algorithm depends upon the number of previous frames taken into consideration.

Usage

```
admedian(b, nf, thresh)
```

Arguments

`b`	3-D matrix containing grayscaled video frames.
`nf`	Number of previous frames to be taken into consideration.
`thresh`	threshold required to obtain foreground images. its value can be around 10 to 30 depending upon the accuracy of the result.

Value

A 3-D matrix of frames containing foreground obtained after background subtraction is applied(binary images).

Examples

```
videoURL <- system.file("extdata","daria_skip.avi",package = "Rbgs")
frames <- readvideoframe(videoURL,1,15)
bground<-admedian(frames,3,25)
```

eigenbgs *Eigen background subtraction algorithm*

Description

This function uses previous frames to construct a background model in eigen space. This eigen background model is then subtracted from current frame to obtain the foreground images.

Usage

```
eigenbgs(b, nf, thresh)
```

Arguments

b	3-D matrix containing grayscaled video frames.
nf	Number of previous frames to be considered. Its value has to be greater than 1.
thresh	threshold required to obtain foreground images.value of thresh can be set to 10 - 15 approximately.

Value

A 3-D matrix of frames containing foreground obtained after background subtraction is applied(binary images).

framediff *Frame difference background subtraction algorithm.*

Description

This functions performs background subtraction on input grayscale frames using dynamic frame difference background subtraction algorithm.The algorithm subtracts the previous frame from the current frame. hence background model is continuously updated with the previous frame.

Usage

```
framediff(b, thresh)
```

Arguments

b	3-D matrix containing grayscaled video frames.
thresh	threshold required to obtain foreground images. Its value can be around 10-30 or more depending upon the accuracy.

Value

A 3-D matrix of frames containing foreground obtained after background subtraction is applied(binary images). @examples ##Save the URL of the video file into R session and then load videoframes videoURL <- system.file("extdata","jog.mp4",package = "Rbgs") frames <- readvideoframe(videoURL,90,110) foreground <- framediff(frames,20)

`guassianbgs` *Gaussian background subtraction algorithm*

Description

This functions creates a gaussian background model using the previous grayscale frames. gaussian parameters (i.e mean and variance) are updated after every new frame is encountered.

Usage

```
guassianbgs(b, thresh)
```

Arguments

`b`	3-D matrix containing grayscaled video frames.
`thresh`	threshold required to obtain foreground images. Its value can be set around 3.5 - 4.5 depending upon the accuracy.

Value

A 3-D matrix of frames containing foreground obtained after background subtraction is applied(binary images).

`inst_xug` *This function helps to add the Xuggle-5.4 to classpath.*

Description

This function asks the user whether to download and add xuggle-5.4 to classpath. Based upon the input provided by the user, specific action is taken

Usage

```
inst_xug()
```

`meanbgs` *Mean background subtraction algorithm*

Description

This function calculates the mean of all previous frames and obtains the #'foreground by subtracting the mean from the current frame. All n-1 frames are #'taken into consideration at nth iteration.

Usage

```
meanbgs(b, thresh)
```

Arguments

`b`	3-D matrix containing grayscaled video frames.
`thresh`	threshold required to obtain foreground images.Its value can lie between 30 40 or more depending upon accuracy of results.

Value

A 3-D matrix of frames containing foreground obtained after background #'subtraction is applied(binary images).

`readvideo` *Read a Video*

Description

This function takes as input URL of the video. It can return maximum hundred frames of the video in which each frame is resized to 100 X 100 pixel image. If the video contains less than hundred frames. then it will return all the frames otherwise it will automatically return first hundred frames. Frames returned are grayscale frames.

Usage

```
readvideo(videoURL)
```

Arguments

`videoURL`	Path to the input video file

Value

A matrix of the grayscale frames.

Examples

```
##Save the URL of the video file into R session and then load videoframes
videoURL <- system.file("extdata","daria_skip.avi",package = "Rbgs")
frames <- readvideo(videoURL)
```

`readvideoframe` *Read the specified frames of a video.*

Description

This function takes as input URL of the video. It reads only those frames of the video that have been specified by the user. It requires two more parameters 'start' and 'end', that defines the range of the videoframes to be retrieved.

Usage

```
readvideoframe(videoURL, start, end)
```

Arguments

`videoURL`	Path to the input video file
`start`	It indicates the first frame you wish to read.IT should be in range zero to frame count and smaller than end parameter.
`end`	It indicates the last frame you wish to read. It should be greater than start and should be in range 0 to frame count.

Value

A matrix of the grayscale frames.

Examples

```
##Save the URL of the video file into R session and then load the required videoframes
videoURL <- system.file("extdata","jog.mp4",package = "Rbgs")
frames <- readvideoframe(videoURL,213,233)
```

staticdiff *Static frame difference background subtraction algorithm.*

Description

This function implements a static background subtraction method in which background model is set to first frame. This static background model is then subtracted from all subsequent frames to obtain the forground images.

Usage

```
staticdiff(b, thresh)
```

Arguments

b	3-D matrix containing grayscaled video frames.
thresh	threshold required to obtain foreground images. Its value can lie between 30-40 or more depending upon the accuracy required.

Value

A 3-D matrix of frames containing foreground obtained after background subtraction is applied(binary images).

Examples

```
videoURL <- system.file("extdata","daria_skip.avi",package = "Rbgs")
frames <- readvideoframe(videoURL,1,9)
bground<-staticdiff(frames,35)
```

totalframe *Total number of frames in a video.*

Description

This function takes as input URL of the video. This function returns total number of frames contained in the video file.

Usage

```
totalframe(videoURL)
```

Arguments

videoURL	Path to the input video file

Value

count total no of frames in a video.

Examples

```
##Save the URL of the video file into R session and then load videoframes
videoURL <- system.file("extdata","daria_skip.avi",package = "Rbgs")
no_of_frames <- totalframe(videoURL)
```

---

varbgs *Variance based background subtraction algorithm*

Description

This function calculates the variance of previous nf number of frames and obtains the foreground by subtracting the variance obtained from the current frame.

Usage

```
varbgs(b, nf, thresh)
```

Arguments

b	3-D matrix containing grayscaled video frames.
nf	number of frames to be considered to construct background model. Its value has to be greater greater than 1. Smaller value gives better results.
thresh	threshold required to obtain foreground images.Its value can be around 220.

Value

A 3-D matrix of frames containing foreground obtained after background subtraction is applied(binary images).

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wtmean *Weighted Mean background subtraction algorithm*

Description

This function calculates the weighted mean of previous three frames. The buffer maintained here can contain only three frames.

Usage

```
wtmean(b, nf, thresh)
```

Arguments

b	3-D matrix containing grayscaled video frames.
nf	It is size of buffer that contains previous frames and its value can be set to three only.
thresh	threshold required to obtain foreground images.Its value can be around 10 - 30.

Value

A 3-D matrix of frames containing foreground obtained after background subtraction is applied(binary images).

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wtvar *Weighted variance background subtraction algorithm*

Description

This function calculates the weighted variance of previous three frames. The buffer maintained here can contain only three frames.

Usage

```
wtvar(b, nf, thresh)
```

Arguments

b	3-D matrix containing grayscaled video frames.
nf	previous number of frames to be considered to build background.
thresh	threshold required to obtain foreground images.Its value can be set to 180-230 or more approximately.

Value

A 3-D matrix of frames containing foreground obtained after background subtraction is applied(binary images).

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