# "Kinovea for Dummies"

# Class User Manual to supplement Kinovea help files by the Students in Bio 131L – Image Analysis (edited by Dr. Catherine Loudon) Spring 2011

# **Topics:**

How to select a frame .						2
More detail on selecting frames						3-5
How to set and change the working	g zone					6-7
How to select a specific number of	frames	in a wo	orking	zone		8-9
Selection of 10 frames around a tar	rget fra	me usii	ng a key	y frame		10-12
How to display speed of tracked of	oject					13-14
Setting the origin and adjusting axe	es					15-17
How to set the calibration scale for	r distan	ce mea	sureme	ent		18-19
Correction to auto tracking .						20-22
Exporting data to Microsoft Excel						23-25
Different ways to save your Kinove	ea proje	ects				26
Tracking the speed of an object						27-28

### How to select a frame

There is no part of the Kinovea manual that instructs students how to select a frame. After importing a specific video, students can start playing the video while paying really close attention to the motion in the video and hit pause at the frame of interest. In the picture to the right, there is a long green line with a vertical black line which shows the time mark (as indicated).

Leaving the video in still motion, the "go to previous/next frame" buttonwhich lies next to the play button-



allows students to manage frames in slow motion. With this method, one can select the



exact frame or moment of interest (see the red boxes below).

From that frame, the student can now count how many frames forward she/he is going to need for the data export out to Excel. For example, the students can click the "go to next frame" button 10 times which corresponds to 10 frames. Now we can scale down the total frames by dragging the blue box at the end of the green line to the left to where the black line is. As shown below, the green line has decreased significantly. Now we can drag the blue box

at the beginning of the green line to the right. The duration below the green line notes the numbers of frames in total. For instance, a duration of 0:00:00:20 indicates a total of 20 frames, so we will drag the blue box in accordance to our requirement.



### More detail on selecting frames - from starting the program to tracking



3. Videos that can be edited on Kinovea will appear in the Kinovea window (see Fig 2 above). Click on the appropriate video. The video will enlarge to take up the whole Kinovea window.



4. a. Press the Play button to play the video. The place in the video will be shown as a black line on a green track.



b. Move the **blue** speed marker back and forth to change the speed at which the video is played so that you can select the segment of the video that you want (see step 5 below).

- 5. Determine which segment, or *frame set*, you want. The *frame set* consists of the frames you want.
- 6. Press \_\_\_\_\_ to stop the video at the beginning of your frame set. Click on side of the green track and drag it to where the black line is.



7. Press \_\_\_\_\_ to stop the video at the end of your segment/frame set. Click on 💌 at right side of the green track and drag it to where the black line is.



- 8. You have now chosen your segment/frame set.
- 9. Click on \_\_\_\_\_\_ at the top of the Kinovea window.
- 10. a. Move the mouse arrow to Time markers format 

  . The symbol will turn yellow and options will be displayed.
  - b. Click on Classic + Frame numbers
  - c. You screen will look like

Explorer 🐟 Shortcuts 🙆	Ingu	Language	•	
		Time markers format	•	Classic (h:mm:ss:hundredth)
Folders:		Software Update		Frames Numbers
Desktop	<u>.</u>	Preferences	-	Classic + Frame numbers

You have now chosen your settings.

11. Right-hand click on your video. You will see:

Track Path	
Set Original Speed	
Save the Current Image to File	
Close This Screen	
And the Real Property lies and the Real Property	

Click on Track Path . You have now told Kinovea to track the motion of an object. See other references for more information on tracking a path.

12. (Similar to steps 1-2 and steps 9-10). Click on File, then Export to Spreadsheet, and 

. See additional references for more information on exporting data.

le	Edit View Image Motio	on Options Help
	Open Video File Ctrl+O	iye55_Linda plane.MP4
L	Recent	
L	Close	
	Save Ctrl+S	
	Export to Spreadsheet	OpenOffice Calc (ODF)
1	Load Key Images Data	Microsoft Excel (MS-XML)
	Quit	XHTML
-6	VIROLOGY IS BOMB.Dat	Trajectories to simple text

### How to set and change the working zone

- 1. Open Kinovea
- 2. In the left top corner of the screen, left-click on the "File" button
- In the pop-up window, navigate to the desired video. By selecting the file and clicking on "Open" button, Kinovea will import selected video. A small pop-up window will automatically show up with "importing frames" processing bar.

Importing Frames	
Decompressed Frames : 199 / ~290	

- b. Once the whole video will be imported, the processing bar will disappear and the selected video will appear in the main Kinovea window.
- 4. At the button of the screen, there is a player controls.

🄁 🚺 🚺 🚺 Working Zone:	Start : 0:00:00:00	Duration : 0:00:42:30
Position - 0:00:00:00	Speed : 100 % 🚽 —	• +
•		5

Indicated above, these are the main buttons to navigate around the video. The button that looks like a small green capsule

- 5. Among them, there are 4 buttons grouped together as "working zone". They are indicated on the image below.
- 6. A working zone defines a set of frames in which any type of "work" (such as adding effects, text, line, etc.) can be done. Working zone can be set equal to or less than the duration of the whole movie.
- 7. A working zone is set using two key buttons, "set the first frame of the working zone to the current frame" , and "set the last frame of the working zone to the current frame" .

8. To set the first or the last frame to any frame in the movie, use navigation bar to get to the

desired frame and click on "set the first frame of the working zone to the current frame".

- 9. Once the working zone is set, there are 3 basic actions that can be done next
  - a. Click on "Lock working zone boundaries" to lock working zone to the selected frames.



b. You can change or working zone by click on either ends of it and literally dragging the ends to the desired frames by pressing and holding either either ends or either ends.

c. By clicking on this button, working zone resets to the length of the full video



d. Note that after each manipulation with the working zone "importing frames" processing bar will appear while Kinovea is processing the changes.

Importi	ig Frames	
Decomp	ressed Frames : 199 / ~200	

### How to select a specific number of frames in a working zone

1. Default setting displays movie in hour: min: seconds. To change to frames, click on **Options** tab → **Time markers format** → select **Frame Numbers** 



2. To obtain the correct desired number of frames, locate the beginning of the working zone by clicking the [ icon on the first frame of the working zone, and ending the working zone by clicking the ]. In order to obtain X number of frames, watch the *position* located at the bottom left of the Kinovea screen as the video is played back, ending the working zone when the position value is the correct number of frames. (adjusting the speed to be slower is usually necessary)

P) 🖓	🗎 A 🖋 /	+ 🕨 🞯 🧠 🔎	
C ] Working Zon		Duration : 195	
Position : 1	Speed : 12 % 🚽 😁	+	
•	0 🖸 🛛	😳 ⇒	

# Selection of 10 frames around a target frame using a key frame

1. Find the target frame with navigation cursor (marked with red rectangle below).



2. Once you find the target frame, click on **Add a Key Frame** (marked with red rectangle below) so you can be sure later on which frame is your target frame.



Below is a picture of what it will look like once you selected the target frame as a key frame.

From now on, you can go directly to the target frame by clicking on the image (shown with the red arrow).



3. Set the playback speed to the slowest speed possible (**Speed Control** marked with red rectangle below), so it is easier to work with each frame.



4. Use the **Player Control** button (marked with red rectangle) to select 5 frames before the target (target frame is the 6<sup>th</sup> frame)



5. After you find the 5 frames before the target frame, click on **Start Working Zone** (marked with red rectangle) to set the first frame of the working zone.



6. Go back to the target frame by clicking on the image (see #2 above), and again using the **Player Control** button (marked with red rectangle), select 4 frames after the target frame.



7. Then click on the **End Working Zone** (on the right as indicated below by the red rectangle) to set the last frame of the working zone.

🔹 [ ] 🚺	Start : 1	Duration : 151
Position : 73 Spee	d:5% — 😁	+
۵	•	😄 ⊃

Below is the picture of what the screen should look like after you finish selecting the Working Zone. Scroll back to the beginning and click on **Player Control** (see step #6); every click will bring you to the next frame in the movie. Check the **Position**, which tells you in what frame you are at in the working zone, as you click through the frames in the working zone with the **Player Control**. The movie should start with "Position 1" and end with "Position 10," as there should be 10 frames total in the working zone.



# How to display speed of tracked object

Step 1 – After tracking the path of your object, return to the first frame by clicking the web button.

Step 2 – On the first frame, right click the Step 2 – On the desired tracked object.



E 1 1 
 Working Zone: Start :0:00.00:00 Duration :0:00:00:18

Step 3 – A scroll menu will appear after right clicking, then select "Configuration."



Step 4 – A selection menu will appear. Click the arrow next to "Measurement" and select "Speed."

				30.4
Configure Pa	ath			X
Configuratio	on			
C	Complete	e Path		
O	🔘 Path sec	tion around current im	age	
( label	C Label fol	lowing the Path		
Label :		Label		
Measure	ement:	None None	*	
	e	Distance Speed		
Color :		Style :		
		Apply	Cancel	

Step 5 – Click "Apply" and the speed will now be shown next to the object in each frame.



### Setting the origin and adjusting axes

The coordinates in a movie are vital to calculate where the object is located relative to other objects also in the video. The coordinates can also serve to calculate velocities in the x-axis and y-axis direction. To do this, begin by recording a video:

1) Open the Kinovea program



2) Here we have the action of throwing a paper plane.



 Record action with a compatible video recorder. Acceptable formats include: AVI, MPG, MOV, WMV, MP4, MKV, VOB, 3GP, MOD, TOD.

4) Upload video into Kinovea by locating file on your computer. (Shown by red arrow)



5) Once the video is imported click on the Image tab. (Shown by red arrow)



6) Scroll down and select **Coordinates system origin**. (Shown by red arrow)



7) Window will pop-up named Set coordinates system origin.



8) Place cursor (shaped as crosshairs ()) where the origin is to be fixed. Once placed, select the point by a mouse click (Shown by red box).



9) Select **Apply**. Now when data is recorded or exported into an Excel file, coordinates will be relative to the selection made in the previous slide. X-component and Y-component velocities may be calculated using this data.

	ny baset Pag	e Leyeut Form	rufai Deta	Review Vow	Arplaneweek/ Apobal	- Microsoft Excel		- 7 X W - 7 X		
B X	Cut Calibr	- 11	- (A' A') (=		Fivinap Test G	neal 🔹 🔢 🛛		E Autosum - 27 A		
	format Painter	Fart.	<u>&gt;-∆-</u> ≡		Herge & Certer * 5	- % + % 4 Conditional fo	able = Styles = = = = =	2 Citar * Solt & Find & Inter * Solet *		
83	7 • (3	f.								
1 Paper Appl 2 Tals 0.0000 3 Tals 0.0000 4 Tals 0.0000	693/1 691(2) 642(2)			Oversigher Market #70004/80	• •		Airplane: Wrist			
9 78a-89008 9 7 Teach	Nex /1						+ (Dryset ve	-		
Diccedition	*(143 107.1 5070 encords) -10.22 -16.23 0.40	(wince)		1200mporent selocity	foral following Kinowee Spe	atorines III	* 10mmet in			
100	-8022 -8033 0.00 3743 -8023 0.00 427 -8028 0.00	0000 (3) 000 0005 (4) 8.88222222	6 803	0 0 118 118 118	0 N1 16225457 TELEDCORD		- test seaty			
	6.37 - 6.42 0.00 4.27 - 6.42 0.00 7.89 - 6.31 0.00 5.71 - 6.03 0.00	0008(E) 0.8	6 K062	27.5 0 -44.7	50,2805471 108.2 2.49 min 100,29746 100,29746	1 an a	10 11 10 10			
18 (16 23	H-12 -21 0.00 H-12 -24.53 0.00 H-24 -26.76 0.00			48.1 48.1 48.3 48.3	16.5482531 16.7436273 16.753640 87.8756233					
72 71 Track	Plane s(kg srk.t litre seconds)	Labored					-			
a i D	1 12 0.0	0006(5			fotal Velocity Kinoves Ege		slane: Paper Airplane			
29 32 31	583 -0.77 0.00 743 -0.77 0.00 0.20 -0.19 0.00 10.4 -0.56 0.00		3 80	125 0 14 	800 2030444 17 176 50 862	- ~	$\sim$			
227.55	24.25 6.74 0.66 25.52 4.3 0.66 34.57 -2.34 0.66	00/10/10 12/08/00	2 176.0 7 MIT	44	101.0005087 1.83 m/z 076.52862 907.52400 91.255407		- 104pm	CHOR		
X 37 38	40.33 -2.79 0.00 40.09 -3.72 0.00	10018 (R) E.2033333 10018 (R) E.2033333 10018 (R) E.20084085	1 1724 7 1724	225	174,250887 175,837953		- 109 /40			
10 11 Per-Dal 12 Tex 1900	600									
43 Tata 8.800 44 45 Track	Pager Ral									
60 Coordinate	104 on 1 fire seconds) -185 6.79 0.80 8.55 6.51 0.60	(mont)		i sconporen velocity	Tatal Helasing Kinowe Spe	eterature and	Ball: Paper Ball			
50 M	343 404 000		002 0 NS3	11.4 14.1 14.5 18.7	76.259/807 86.009/0781 622.5524360 50.5624880 1.56 role	-				
54 55 56	1165 43 0.00 24.75 6.32 0.00 25.36 6.52 0.00 25.4 41 0.00	19008(6) 0.7	6 853 3 643		185.3 154.2545236 100.17		· · · · · · · · · · · · · · · · · · ·			
50 58 59 50 Tuck	26.54 41.040	10018 (RE) 8.28333333 10018 (RE) 8.28333333	6 1064 2 1468		106 715 935 191 3300022					
48	104 (75.1 574 (1000)) 5.05 <sup>1</sup> (5.25 <sup>1</sup> )	[selocity]		i somporent velocity	Total Infosty Known Spr		m n W n			
Ready	Sheet4_Sheet1_	sket2 sheet3	1.00	87	0.00000	(m)	Rall-Wrist			
8	[						12	Harmines (e)		
9	Coordi	nates (	х,у: оп	n; t: time	seconds	)	(velocity)			
10	x	-	Α.		y	t	t	x component veloci	y component velocity	Total Velocity
11		- 1	P .	-10.22	-19.33	0:00:00:00 (1)				•
12				-10.22	-19.33	0:00:00:01(2)	0.01666667	0	0	T
13				-7.43	-18.21	0:00:00:03 (3)	0.05	83.7	33.6	90.192294!
14				-4.27	-16.35	0:00:00:05 (4)	0.08333333	94.8	55.8	110.00309
15				-0.37	-15.42	0:00:00:06 (5)	0.11666667	117	27.9	120.28054
16				4.27	-15.42	0:00:00:08 (6)	0.15	139.2	0	135
17				7.99		0:00:00:10 (7)	0.18333333	111.6	-44.7	120.21917
	1									

# How to set the calibration scale for distance measurement

1. Open a movie clip by left-click on File from the top -> Open Video File. Select a movie that you want to work on.



2. Have an actual measurement of reference in the clip. In an example shown, a blue paper was the reference (22.86 cm x 30.48 cm).

3. Left-click on **"Line"** \_\_\_\_from the bar under the movie frame.



4. Draw a line by left-click on one point of the reference and drag to the other point. You can adjust it more accurately by zooming-in (Ctrl + Scroll Wheel with the cursor on the movie screen).



5. Left-click on the line drawn to select. Then, right-click on the line to open the menu. Left-Click on "**Calibrate Measure**".

0.00 m/s 2 0.00 m/s 0.00	Color and Size Persistence Display Measure Calibrate measure Go to Key Image	
	Delete	

6. Enter the value of the actual measurement for the reference in a left box (Here, we use 30.48). Make sure you select a right unit from drop-down bar (Here, we use "cm"). Then Left-click on **"Apply"** button.



7. Finished! Every measurement in the movie is now calibrated!

### **Correction to auto tracking**

For movies that are not perfectly clear or crisp, the Auto-track option on Kinovea tends to lose the object tracked and present an incorrect path. To fix this you must manually fix the auto-tracking and here is how:

# To begin Auto-tracking:

- 1) Right click on the object you want to track
  - a. Select "track path"
- 2) Moving the movie forward using the "play" button (marked by red box below). This will allow Kinovea to auto- track the selected object through the rest of the clip





These figures show an example of the inaccurate auto-tracking using the "play button":

Figure 1: Here you can see the original track point is set on the wrist and the tip of the plane

Figure 2: Due to the unclear image, you can see that the tracking marker has lost both the wrist and the tip of the plane and slipped to a different part of the figure



Figure 3: At the end of the motion, we can see the auto tracked path is clearly not the tracked path of the object we originally marked

### To fix this incorrect tracking:

- 1) Right click on the object you want to track
  - a. Select "track path"
- Instead of moving movie forward by pushing play button, instead use "go to next frame" button (Indicated by red box below)



- This way you will be able to access the placement of the tracking marker for each frame
- 3) If the tracking marker has moved from your original placement and you will need to readjust
  - a. To do this, right click on the tracking marker and select "restart path edition"
- 4) This will bring up a marker. Left click on this symbol and you can drag the + to the point which you originally tracked. After placing the + in the correct position on the selected object, the tracked path will be automatically corrected to the placement of the marker which you choose.
- 5) Continue this process through all of the frames which you wish to track.
- 6) After you have finished adjusting the auto track for all frames, you can go back to beginning and push the "play" button to view the corrected tracked path.

These figures show an example of the previous incorrect auto-track shown above fixed using the technique just described:



Figure 4: Here we have chosen the same points as we did in the previous example

Figure 5: Here the auto track has been corrected and placed on the original points which were selected

Figure 6: Here you can see the corrected auto-track path is a much better representation of the movement of both objects

# **Exporting Data to Microsoft Excel**

### 1. Exporting data

Once you have defined your numerical data (i.e. tracking data) you can export the data in Kinovea using the menu under **File > Export to Spreadsheet > Trajectories to simple text.** 

ile	Edit View Image Motion	Options Help
	Open Video File Ctrl+O	Copy of andrewvd_egor ball.MP4
	Recent +	
	Close	I
	Save Ctrl+S	
	Export to Spreadsheet	OpenOffice Calc (ODF)
	Load Key Images Data	Microsoft Excel (MS-XML)
	Quit	XHTML
-		Trajectories to simple text

Then save your file. This will save the file in the format, ".txt"

### 2. Import data to Excel

Open the excel file that you would like to import the data to. Using the menus under **Data** tab, click on **"From Text"** located in the "General External Data" box.

93	9	~ (°# ~ ) <del>+</del>								Book1 -	Microsof	ft Excel
	Home	Insert	Page Layout	Formula	as	Data Review	N	View	Acrob	at		
From Access	From Web	From From	Other Exist rces + Conne	ing Ref	resh	Connections Properties Edit Links	Az↓ Z↓	AZA Sort	Filter	Clear Reapply Advanced	Text to Column	
		Get External	Data		Co	onnections		So	rt & Fil	ter		
	A1	Get External	Data From Text									
1	А	Import data	a from a text file		E	F	G	н		I I	J	К
1		Press F1	for more help.									Remove os Duplicates V
2		Pless FI	tor more neip.									
3												
4												

Then a window will prompt asking you to locate the required file. Locate your saved file from Kinovea and click "**Import**"

The "**Text Import Wizard**" window will prompt and guide you through on the specification of how you would like to import the file.

1	Text Import Wizard - Step 1 of 3	? 🗙
	The Text Wizard has determined that your data is Fixed Width.	
	If this is correct, choose Next, or choose the data type that best describes your data.	
-	Original data type	
	Choose the file type that best describes your data:	
-	Delimited - Characters such as commas or tabs separate each field.     Fixed width     Fields are aligned in columns with spaces between each field.	
	Start import at row: 1 🗢 File grigin: 437 : OEM United States	~
-		
-	Preview of file E:\Bio Sci E131L\Lab 3\andrewvd_egor plane_both.txt.	
1	1 #Kinovea Trajectory data export	~
	2#TXY	
	30:00:00:00 46.97 54.96 40:00:00:03 50.57 56.21	
	<u>5</u> 0:00:00:06 54.96 57.31	~
		>
	Cancel < Back Next > E	jinish

Click "**Next**". This will lead you to step 2 of 3 in the wizard. In step 2, you can manually adjust the column breaks if needed.

Text Import Wizard - Step 2 of 3	? 🗙
This screen lets you set field widths (column breaks). Lines with arrows signify a column break.	
To CREATE a break line, click at the desired position. To DELETE a break line, double click on the line. To MOVE a break line, click and drag it.	
Data greview	
40 50 60 70	
#Kinovea Trajectory data export	^
#T X Y 0:00:00:00 46.97 54.96	
0:00:00:03 50.57 56.21	
0:00:06 54.96 57.31	~
Cancel < Back Next > Ein	iish

Press "Next" and you will be led to the last step of the wizard.

is screen lets folumn data f		each col	olumn and set the Data Format.
General			
<u> </u>			'General' converts numeric values to numbers, date values to dates, and all remaining values to text.
Date:	MDY	*	Advanced
🔵 Do not im	port column	(abia)	
	pore column	(жр)	
ata preview			1
ata preview General Skinowea	Generad	eneral	1 ta export
ata preview General Skinovea FI X Y	Cenera0 Trajecto	eneral ory dat	ta export
ata preview General	CeneraC Trajecto 0 46.97 3 50.57	eneral ry dat 54.96 56.21	ta export

In step 3, you can adjust the format the data if desired. Otherwise, click "**Finish**." The file is now successfully imported into Microsoft Excel.

eview	Review	Data	ulas	For	Page Layout	Insert	Home	/	-
	rties nks	Connec Propert Edit Lin	efresh All *		m Other purces *	xt So	Web	rom	
	\$	nections				t Externa			_
	54			#Kind	Ja Ja	•	A1		_
-	F		_	D	C	B	A	hur	4
					ry data export	iject o		#Kir	1
					54,96	6.97	0:00:00		2
					56.21	0.57	0:00:00		3
					57.31	4.96	0:00:05		4
					57.93	0.12	0:00:00		6
					58.24	65.6	0:00:13		7
					58.09	68.73	0:00:15		8
					57.93	71.4	0:00:10		9
					55.74	71.71	0:00:23		10
					54.33	71.4	0:00:26		11
					52.76	9,99	0:00:29	0:00	12
									13
									14
					70.14	6.03	0:00:00	0:00	15
					71.87	9.95	0:00:03	0:00	16
					73.12	4.96	0:00:06	0:00	17
					74.84	2.79	0:00:09	0:00	18
					76.41	0.77	0:00:13	0:00	19
					77.82	9.23	0:00:16	0:00	20
					78.76	86.9	0:00:19	0:00	21
					79.54	4.41	0:00:23	0:00	22
					80.16	01.9 3	0:00:26	0:00	23
					80.48	08.8 2	0:00:29	0:00	24
					80.48	08.8 2	0:00:29	0:00	24 25

# Different ways to save your Kinovea projects

- 1. Use menu File  $\rightarrow$  Save or use the toolbar's "Save" button.
- 2. You will have 4 options:
  - a. Save video only
  - b. Combine video and key images data in the file
  - c. Permanently paint key images data on the video
  - d. Save only the key images data

3. Saving a file means preserving your selected working zone, current slow motion value and other preferences.

4. Supported output formats include MKV (Matroska), MP4, and AVI.

5. Supported codec for output is MPEG4-ASP (which is DivX/Xvid compatible).

6. If key images data were added to the video, by default it will save as option "b" above, Combine video and key images data in the file.

a. This method separates the original images from the key images data within the same file.

b. Opening this type of saved file in Kinovea allows you to modify your drawings, stopwatches, paths and comments.

c. Opening this type of saved file in another program only allows you to view the original images.

7. If you desire to export your video so that your drawings, stopwatches and paths are visible if opening the video using another program, use option "c" to save the file, Permanently paint key images data on the video.

a. However, your written comments on the key images will be lost.
8. To save only the original, raw images then select option "d," Save only the key images data.

# Tracking the speed of an object

#### Step 1: Selecting an object to track

Right click on the point/object in the digital video that you want to track and click "Track Path" A blue box with a crosshair will appear over the object. We can use this later to correct for the desired object path for analysis.





#### Step 2: Tracking and correcting the object movement path

Allow the Kinovea program to automatically track the path of the object by viewing the video frame by frame, using the keyboard arrow buttons (right or left arrows) to move through the video. You may correct errors in the automatic object tracking by dragging the blue crosshair box to the correct path and position during each frame of movement for the object.





(Drag from the small blue crosshair to the point desired.)

#### Step 3: Calibration

In order to measure the speed of the object, we must calibrate the scale of the video with a reference sized object. In this example, we used an A4 sheet of letter paper to calibrate (30.48 cm in width). Make sure the plane of the reference material is parallel to the camera lens for maximum accuracy in your measurements.

First we create a solid line on top of a reference length in the video. Press the "line" button on the bottom taskbar and it allows you to drag a neon green line from point to point (Hold, and release button at





#### the end) in the video.

Next, right click the created line and click on "Calibrate measure..." then fill in the real size of the indicated segment in the desired units.





#### **Step 4: Configure measurement for speed**

Right click the tracked path, click "configuration", and set the measurement for "Speed".



#### Step 5: Measuring speed and exporting data

First, replay the video with the entire tracked path so that Kinovea will calculate the speed of the tracked object in each digitized frame. The speed of the tracked point is shown in the blue box in each successive frame, following the small black and white roundel.



Export the data by clicking "File>export to Spreadsheet" and then choosing the desired export format. The current Kinovea version 0.8.7 exhibits incompatibility with some user system configurations when exporting to Excel (MS-XML) format due to the recent changes by Microsoft to its original ".xls" format, so we recommend the majority of users to export desired data to XHTML format. The XHTML formats are opened with any current web browsers (i.e. Firefox, Google Chrome) and then relevant data can be copied into Excel, with spreadsheet formatting kept intact due to the transposable nature of XML structured data.

