

# Start:

The screenshot shows a software window titled "main" with the following elements:

- A text input field at the top for file selection.
- A "Browse" button to the right of the text input field.
- A "File deliminator" field with a semicolon (;) and a "Skip rows" field with the value "0".
- A "view" checkbox that is checked.
- A "Load" button.
- A section for time-based settings: "Start: ----", "Stop: ----", "Duration: ----", and a "Change" button.
- A section for range settings: "x\_min: ----", "x\_max: ----", "y\_min: ----", "y\_max: ----", and a "Change" button.
- A "Select Filter" dropdown menu.
- An "Apply Smoothing" button.
- A "Plot" button.
- A "Stats and save" button.

Click to select datafile

Load selected file  
into application

Settings of the original file

main

	1	2	3	4	5	6	
1	18	360.0	0	True	3	cm	-1.0
2	19	380.0	0	True	3	cm	17.
3	20	400.0	0	True	3	cm	17.
4	21	420.0	0	True	3	cm	17.
5	22	440.0	0	True	3	cm	17.

frames  time(ms)

fish\_x  fish\_y  fish\_angle(deg)

Data of original csv file

Set the column number of each variable and confirm with ,OK'

main

Time:

☒ frames ☐ datetime

☒ milliseconds ☐ seconds

Angle representation:

☒ deg ☐ rad

Additional cateories:

☐ Region

☐ RoboMode

main

Agents:

Names:

agent0

Set number of agents you want to study and press ,Change' confirm

Give the agents individual names which will be used in the results-files and confirm with ,OK'

Choose time format (a column with framenummer is always necessary)

Choose angle representation

Add additional features

# Main after loading data:

The screenshot shows the 'main' application window with the following elements:

- File path:** `/preprocessing/CouzinDataOutWedMar01121659201.csv` with a **Browse** button.
- File deliminators:** `;` with a **Load** button.
- Skip rows:** `0` with a **view** checkbox.
- Time range:** **Start:** 2017-03-01 12:17:14 (1), **Stop:** 2017-03-01 12:21:29 (5437), **Duration:** 0:04:15 (5436). A **Change** button is below.
- Coordinates:** **x\_min:** 12.7, **x\_max:** 84.85, **y\_min:** 10.05, **y\_max:** 79.1. An **Ok** button is below.
- Filtering:** A **Select Filter** dropdown menu and an **Apply Smoothing** button.
- Actions:** **Plot** and **Stats and save** buttons at the bottom.

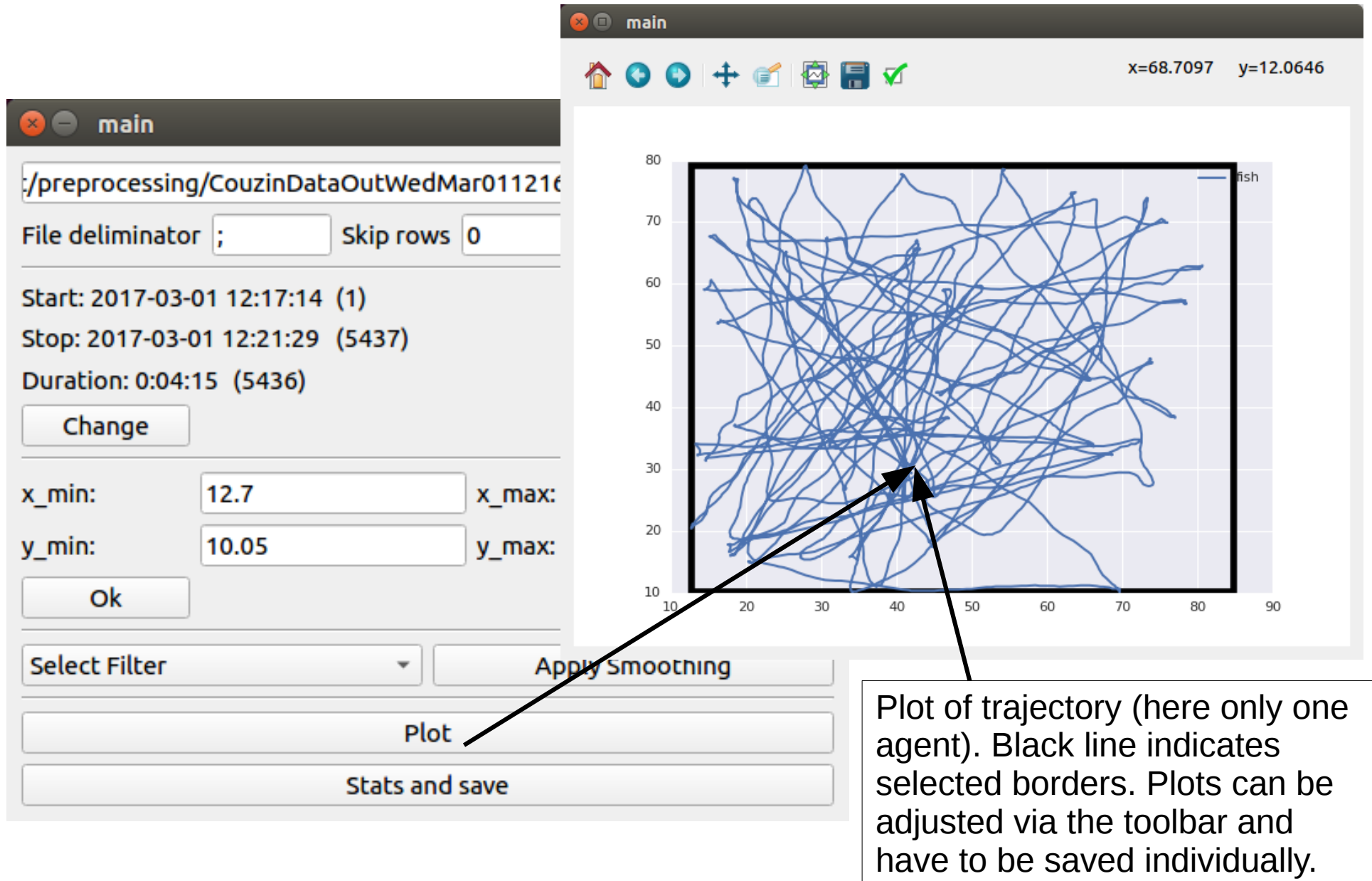
This inset shows a zoomed-in view of the time range selection part of the 'main' window. It features two horizontal sliders. The top slider is labeled 'Start' and is set to 'Mar 01 12:18:06 2017' with a value of '1104'. The bottom slider is labeled 'Stop' and is set to 'Mar 01 12:21:29 2017' with a value of '5437'. An **OK** button is located to the right of the sliders.

The sliders allow to set start and stop time for analysis. (confirm with ,OK')

The default values are inferred from position data. Can be adjusted to match borders of arena or a subspace of the whole arena (confirm with ,OK')

Select filter to smooth trajectory (currently only median filter with  $k = 5$ ). (apply with ,Apply Smoothing')

# Plotting:



# Results:

Clicking 'Stats and save' uses the selected options (Agent number and names, Time and Angle Format, Start/Stop time, x and y limits) and calculates basic statistics. Each time the application is called a folder is created with the current date and subfolders for each time the application was called (e.g Folder 2018\_02\_08 with subfolders 000, 001, 002, ...)

Each of the subfolder will contain 2 .csv files:

1. timelines.csv with columns:

- frames,**
- time** (in selected format),
- distance** between pairs of agents

for each agent:

- x-position,**
- y-position,**
- angle,**
- x-velocity,**
- y-velocity,**
- absolute speed**

2. info.csv with columns:

**Source:** original datafile

**x\_min:** selected border value

**x\_max:** selected border value

**y\_min:** selected border value

**y\_max:** selected border value

**Start:** selected start time

**Stop:** selected stop time

**Filtered:** true or false depending on whether or not smoothing was applied

For each agent:

**trajectory\_length:** total length of agents trajectory

**mean\_speed**

**var\_speed**

**min\_speed**

**25%\_speed:** i.e 25 percentile

**median\_speed**

**75%\_speed**

**max\_speed**

For each pair of agents:

**mean\_dist**

**var\_dist**

**min\_dist**

**25%\_dist**

**median\_dist**

**75%\_dist**

**max\_dist**