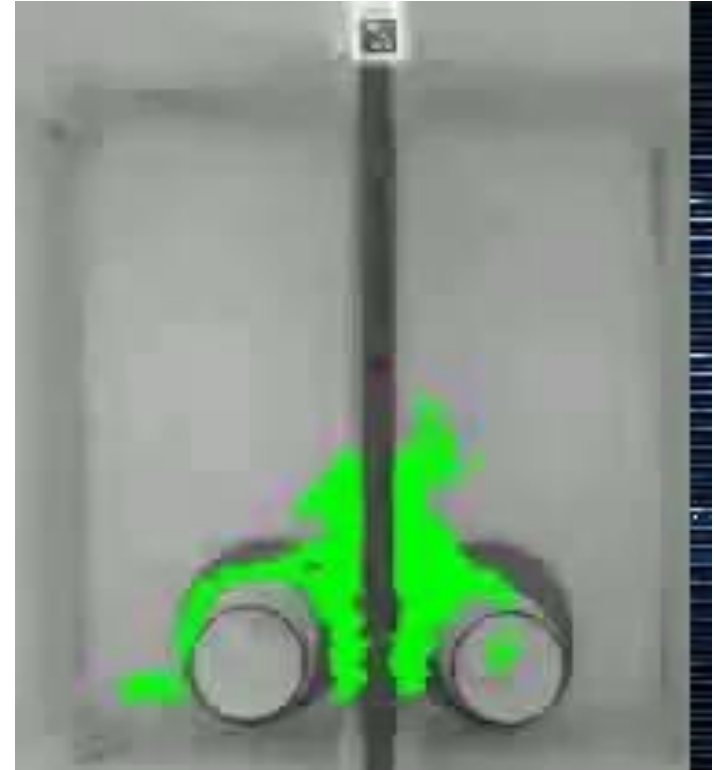
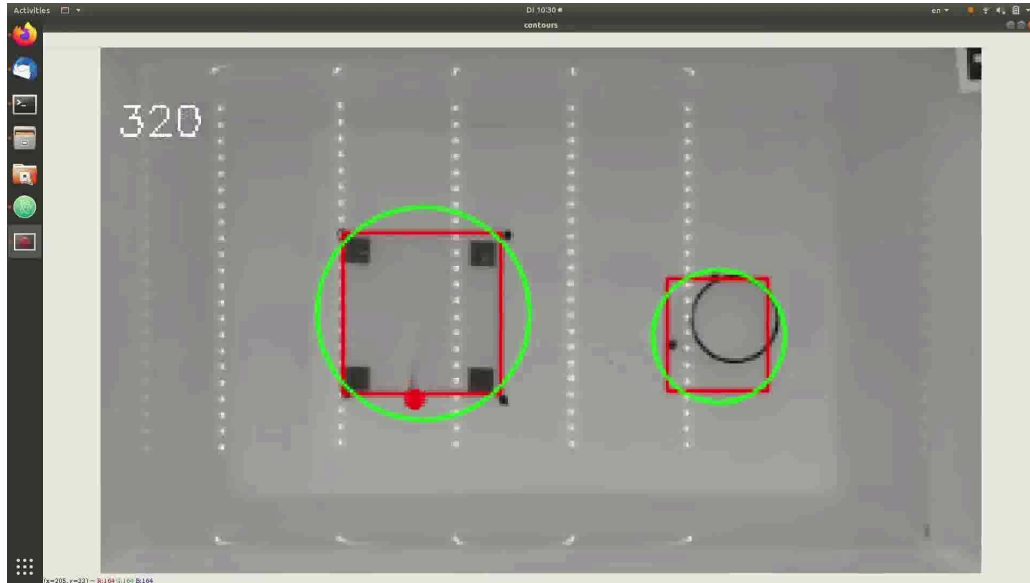


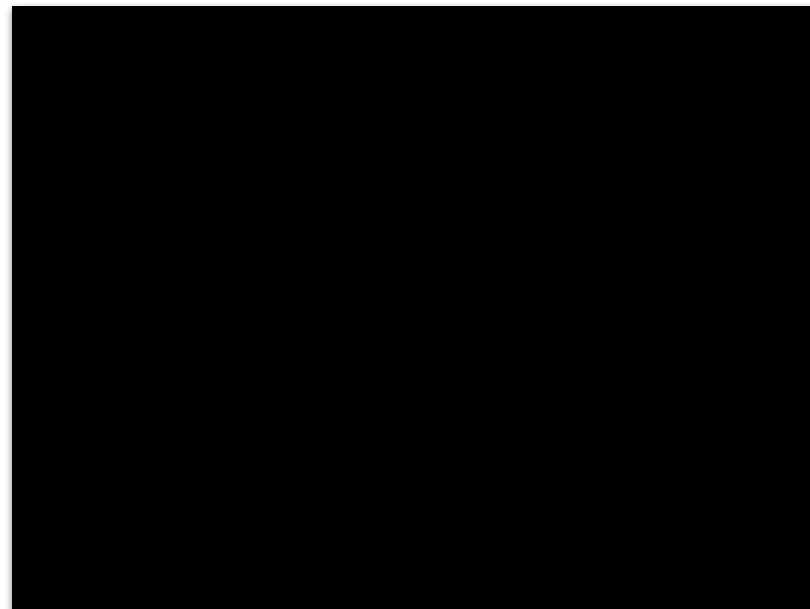
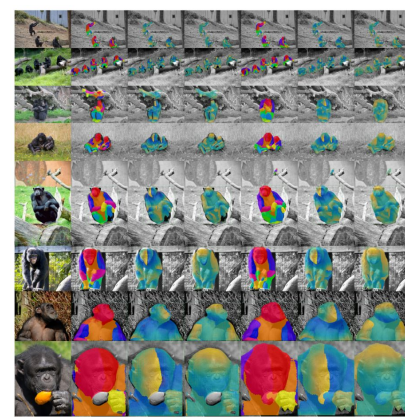
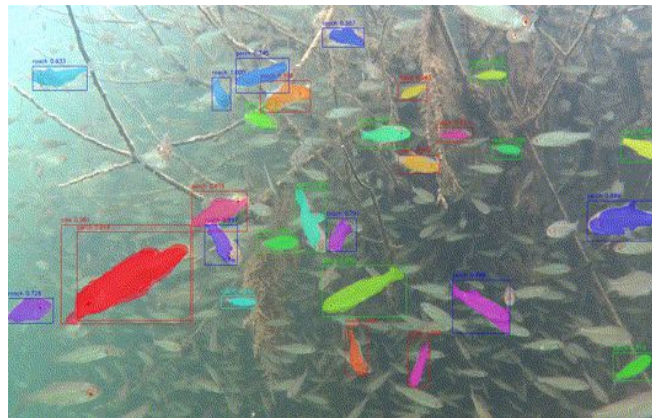
In-House Tracking solutions:

- Very low quality video (~300 x 400 px)
- 2D (x,y coordinates)
- Single individual or multiple IDs in easily distinguishable sectors (two sides of tank)
- No annotations required
- Automatic object detection, for regions of interest
- Quick and dirty



In-House Tracking solutions:

- High quality videos (2040x2046 px)
- 2D (x,y coordinates) or 3D (x,y,z)
- Multiple IDs
- Annotations required
- Automatic object detection, for regions of interest, food detection, dealing with occlusions
- Slow and robust



In-House Tracking solutions:

- High quality videos (2040x2046 px)
- 2D (x,y coordinates) or 3D (x,y,z)
- Multiple IDs
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- Automatic object detection, for regions of interest, food detection, dealing with occlusions
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Methodology Article | [Open Access](#) | Published: 23 June 2020

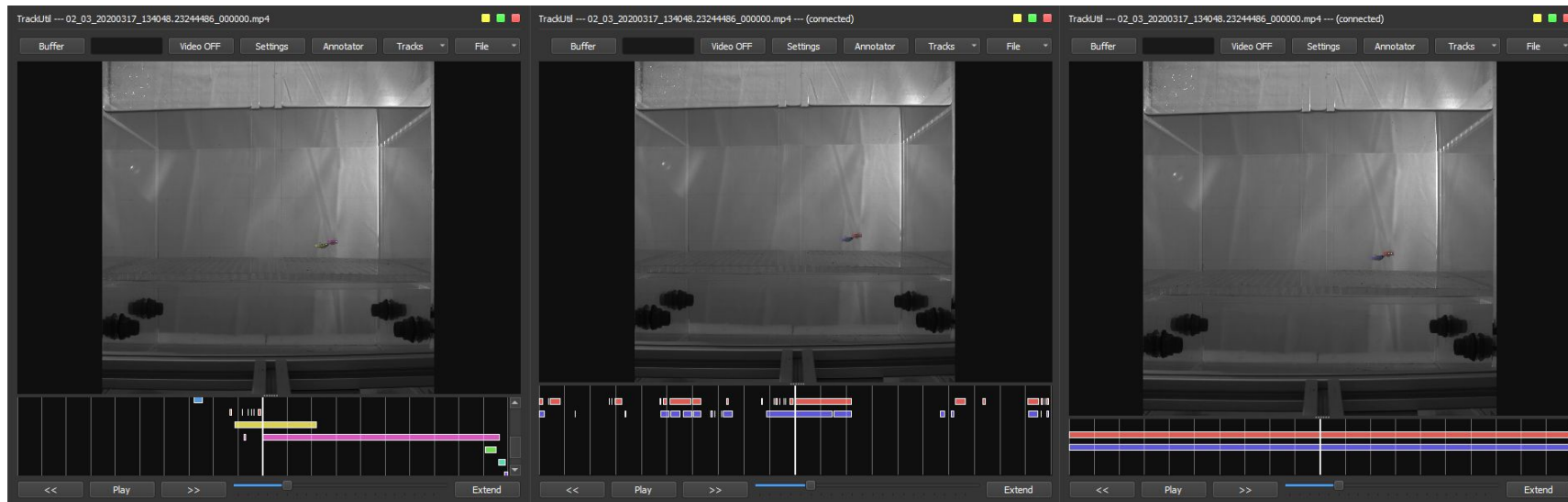
High-resolution, non-invasive animal tracking and reconstruction of local environment in aquatic ecosystems

[Fritz A Francisco](#), [Paul Nührenberg](#) & [Alex Jordan](#)

Movement Ecology 8, Article number: 27 (2020) | [Cite this article](#)

1132 Accesses | 22 Altmetric | [Metrics](#)

Supplemental material: **TrackUtils** for manual correction



In-House Tracking solutions:

- High quality videos (2040x2046 px)
- 2D (x,y coordinates)
- No annotations required
- Designed to maintain identities of multiple (n~200) individuals
- Slow and somewhat robust



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Welcome to idtracker.ai's documentation!

idtracker.ai allows to track groups of up to 100 unmarked animals from videos recorded in laboratory conditions.



New release: idtracker.ai v3

- A more robust [Graphical user interface \(GUI\)](#).
- Possibility of [Tracking from the terminal](#) which allow for a higher throughput pipeline.
- Modify [Advanced parameters](#) to optimize memory management and other features of the algorithm.

Check [What's new in idtracker.ai v3](#) and join the [idtracker.ai users group](#) to get announcements about new releases.

Start using idtracker.ai

Check the [Installation and requirements](#) to find the best installation mode for your usage case.

In-House Tracking solutions:

- High quality videos (2040x2046 px)
- 2D (x,y coordinates)
- Minimal annotations required
- Designed to maintain identities of multiple (n~200) individuals
- Fast and robust



beta

\$TRex

```
conda create -n tracking -c main -c conda-forge -c  
trexing trex
```

[read more](#)

have a look at the [docs](#) first. this software is [open-source!](#)

a [preprint](#) is now available.

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AI assisted tracking

...or the art of “Telling the computer what to detect”

- **This approach is useful for occlusions and difficult settings**
- **Initial time investment may be high**
- **Results in a prediction model (network) which can be used to detect objects in images**

The Process:

1. **Annotating images: Marking object of interest**
2. **Training a neural network/model to distinguish object of interest**
3. **Predicting on new images using the trained model**

AI assisted tracking

“What is the question?”

Does the question require individual identities to be kept over time?

- If so you may want to use AI assisted detection and tracking, or else you can use much easier approaches and don't have to use complex models and algorithms
- The process generally has two stages: detection and tracking/keeping identity

Is the setting complex or simple, are there many occlusions and lighting differences?

- If so you would use an AI assisted system to determine the object you would like to track. In simple cases Background subtraction or color thresholding can be sufficient.

AI assisted tracking

SLEAP <https://sleap.ai/>

- Requires manual annotations
- Estimates body posture (key points, skeleton)
- Frame-by-Frame analysis
- Output: Time, X, Y

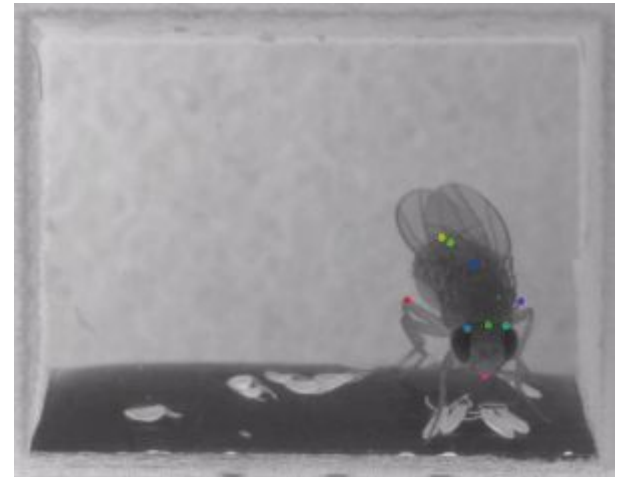
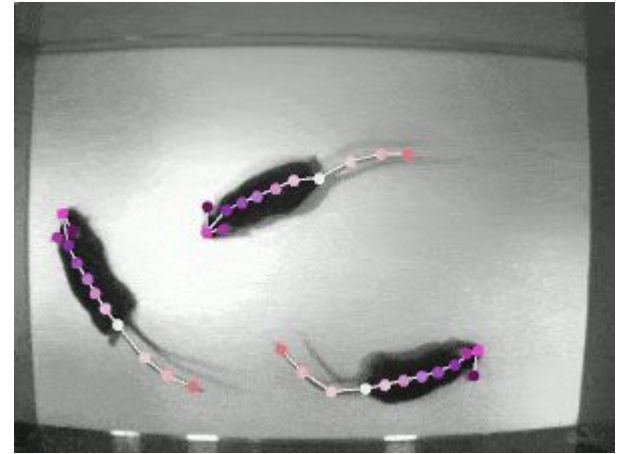


AI assisted tracking

DeepLabCut

<https://github.com/DeepLabCut/DeepLabCut>

- Requires manual annotations
- Estimates body posture (key points, skeleton)
- Frame-by-Frame analysis
- Output: Time, X, Y



AI assisted tracking

Home-made approach:

- Using [Detectron2](#) and [makesense.ai](#)
- Very much work in progress
- Can be used online using [Google Colab](#)



Source code can be found here:

<https://github.com/fritzfrancisco/TrackingUtilities>