Title: DeepLabCut a crash course

Subtitle: Why you should start using it in your research.

What is it all about? Is DeepLabCut something for me?

In case you have never heard about DeepLabCut, here goes a little crash course. What was the original research question, how was it developed, what does it do now?

First of all, you will need to use python and several python related libraries (i.e. a specific python environment). Or rather, DeepLabCut will need it, don’t panic! If you have no programming experience whatsoever and not the slightest interest in learning to code, this crash course is still relevant for you. Nevertheless, I will assume either interest or minimal experience in any programming language. This post will provide you with code snippets, jupyter notebooks and plenty of useful references to work through the python code step by step. If you are still not interested, you will learn to use your mouse and a graphic user interface with pretty buttons.

Installation

This is arguably the hardest part, but let’s start easy.

First, you will have to install Anaconda, a free python distribution and package manager that will help you keep all your libraries up to date. The process varies slightly depending on your machine (Windows, macOS or Linux), but overall, you will have to click here [https://docs.anaconda.com/anaconda/install/], choose your system, download the installer and click through all Next, Agree and Install buttons. Once finished, you can use Anaconda itself either through the Navigator (a graphic user interface) or the Terminal (the scary black pop-up window).

Next, you will install DeepLabCut, and for that you will have to choose between the full GPU and the simpler CPU version. Because training deep neural networks is quite computationally intensive, most machine learning approaches make use of additional hardware (graphic processing units or GPUs) originally used in gaming to perform fastthe needed computations. That means that most computers and laptops won’t have the processing power required, yet, without upgrading the GPU first. But luckily, the CPU version of DeepLabCut will allow you to perform most of the pre- and post-processing on your regular computer, while outsourcing the actual model training to a cloud computing environment like Google Colab (more on that later).

In case you already have a GPU or the chance to upgrade your computer you will first have to install the Nvidia drivers from here [https://www.nvidia.com/download/index.aspx] and CUDA 10 from here [https://developer.nvidia.com/cuda-10.0-download-archive].