Cell-ACDC

A GUI-based framework for **segmentation**, **tracking** and **cell cycle annotations** of microscopy imaging data. It includes two of the latest deep learning methods, [Cellpose](https://cellpose.readthedocs.io/en/latest/) and [YeaZ](https://github.com/lpbsscientist/YeaZ-GUI).

*Written in Python 3 by Francesco Padovani and Benedikt Mairhoermann.*

Checkout our paper here.

# Installation

1. Download the latest release from [here](https://github.com/SchmollerLab/Cell_ACDC/releases).
2. If you don’t already have Python or Anaconda, download and install Miniconda for Python 3.8 [here](https://docs.conda.io/en/latest/miniconda.html). We recommend using Anaconda even you already have Python.
3. Follow the instructions below specific to your OS

## Installing on Windows using conda

1. Unzip the latest release you downloaded before. For this example, I will assume it was unzipped into C:\Users\Frank
2. Open the Anaconda Prompt (you should be able to find it from the search bar)
3. Navigate to the folder where you unzipped Cell\_ACDC, (in this example it is C:\Users\Frank\Cell-ACDC ) by typing cd “C:\Users\Frank\Cell\_ACDC” Press “Enter” to confirm. Note that if you unzipped into a drive different from C:\ tou first need to change the drive letter in your terminal. To do so type the letter first (e.g., G:) and then you can navigate with the cd command.

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1. Now type the following commands **one at the time** (press “Enter” after each command and type “Y” when requested):

conda update -n base -c defaults conda

conda clean --all

conda env create --file acdc.yml

Anaconda will create the environment with Python 3.8 and all the packages required. This step can take several minutes (about 20 minutes if I have to guess, but it depends on your internet connection speed).

If successful, your terminal should now look like the screenshot below (red circle around the part that will tell you that the installation was successful). If you had an error, you could try installing using pip (see instructions below) or open an issue [here](https://github.com/SchmollerLab/Cell_ACDC/issues).

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## Installing on Windows using pip

1. Download and intall Python 3.8.4 from [here](https://www.python.org/ftp/python/3.8.4/python-3.8.4-amd64.exe). **Make sure to check the option** Add Python 3.8 to PATH and then install with default options.

Graphical user interface, text, application

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1. Unzip the latest release you downloaded before. For this example, I will assume it was unzipped into C:\Users\Frank
2. Open a terminal (either a Command Prompt or PowerShell, you can find both from the search bar)
3. Navigate to the folder where you unzipped Cell\_ACDC, (in this example it is C:\Users\Frank\Cell\_ACDC) by typing cd “C:\Users\Frank\Cell\_ACDC” Press *Enter* to confirm. Note that if you unzipped into a drive different from C:\ tou first need to change the drive letter in your terminal. To do so type the letter first (e.g., G:) and then you can navigate with the cd command.
4. Now type the following commands **one at the time** (press “Enter” after each command and type “Y” when requested):

py -m pip install --upgrade pip

py -m venv env

.\env\Scripts\activate

py -m pip install -r requirements.txt

You will now see all the required packages being installed. If successful, your terminal should look like the screenshot below. If you had an error, you could try installing using Anaconda (see instructions above) or open an issue [here](https://github.com/SchmollerLab/Cell_ACDC/issues).

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## Installing on macOS using conda

1. Unzip the latest release you downloaded before. For this example, I will assume it was unzipped into SCREENSHOTPATH
2. Open a **Terminal** (Click the Launchpad icon Apps in Launchpad am Mac sortieren - Macwelt in the Dock, type “Terminal” in the search field, then click Terminal)
3. Navigate to the folder where you unzipped Cell\_ACDC, (in this example it is SCREENSHOTPATH/Cell\_ACDC) by typing cd “SCREENSHOTPATH/Cell\_ACDC” Press “Enter” to confirm.

**SCREENSHOT**

1. Now type the following commands **one at the time** (press “Enter” after each command and type “Y” when requested):

conda update -n base -c defaults conda

conda clean --all

conda env create --file acdc.yml

Anaconda will create the environment with Python 3.8 and all the packages required. This step can take several minutes (about 20 minutes if I have to guess, but it depends on your internet connection speed).

If successful, your terminal should now look like the screenshot below (red circle around the part that will tell you that the installation was successful). If you had an error, you could try installing using pip (see instructions below) or open an issue [here](https://github.com/SchmollerLab/Cell_ACDC/issues).

**SCREENSHOT**

## Installing on macOS using pip

1. Download and install Python 3.8.5 from [here](https://www.python.org/ftp/python/3.8.5/python-3.8.5-macosx10.9.pkg). Install with default options.
2. Unzip the latest release you downloaded before. For this example, I will assume it was unzipped into /Users/anikavanessaseel/Documents/GitHub/Cell\_ACDC
3. Open a **Terminal** (Click the Launchpad icon Apps in Launchpad am Mac sortieren - Macwelt in the Dock, type “Terminal” in the search field, then click Terminal)
4. Navigate to the folder where you unzipped Cell\_ACDC, (in this example it is /Users/anikavanessaseel/Documents/GitHub) by typing cd “/Users/anikavanessaseel/Documents/GitHub/Cell\_ACDC” Press *Enter* to confirm.
5. Now type the following commands **one at the time** (press “Enter” after each command and type “Y” when requested):

python3 -m pip install --user --upgrade pip

python3 -m venv env

source env/bin/activate

python3 -m pip install -r requirements.txt

You will now see all the required packages being installed. If successful, your terminal should look like the screenshot below. If you had an error, you could try installing using Anaconda (see instructions above) or open an issue [here](https://github.com/SchmollerLab/Cell_ACDC/issues).

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## Installing on Linux using conda

1. Open a **Terminal**
2. Unzip the latest release you downloaded before. For this example, I will assume it was unzipped into /home/elpado/GitHub/
3. Navigate to the folder where you unzipped Cell\_ACDC, (in this example it is /home/elpado/GitHub/) by typing cd “/home/elpado/GitHub/Cell\_ACDC”
4. Now type the following commands **one at the time** (press “Enter” after each command and type “Y” when requested):

conda update -n base -c defaults conda

conda clean --all

conda env create --file acdc.yml

Anaconda will create the environment with Python 3.8 and all the packages required. This step can take several minutes (about 20 minutes if I have to guess, but it depends on your internet connection speed).

If successful, your terminal should now look like the screenshot below (red circle around the part that will tell you that the installation was successful). If you had an error, you could try installing using pip (see instructions below) or open an issue [here](https://github.com/SchmollerLab/Cell_ACDC/issues).

**SCREENSHOT**

## Installing on Linux using pip

1. Open a **Terminal**
2. Make sure you have Python 3.8 and pip installed. Check if you have Python with python –version command and check if you have pip with pip help command. If you don’t have them install with the following commands:

sudo apt-get update

sudo apt-get install python3.8

sudo apt-get install python3-pip

1. Unzip the latest release you downloaded before. For this example, I will assume it was unzipped into /home/elpado/GitHub/
2. Navigate to the folder where you unzipped Cell\_ACDC, (in this example it is /home/elpado/GitHub/) by typing cd “/home/elpado/GitHub/Cell\_ACDC”
3. Now type the following commands **one at the time** (press “Enter” after each command and type “Y” when requested):

python3 -m pip install --user --upgrade pip

python3 -m venv env

source env/bin/activate

python3 -m pip install -r requirements.txt

You will now see all the required packages being installed. If you had an error, you could try installing using Anaconda (see instructions above) or open an issue [here](https://github.com/SchmollerLab/Cell_ACDC/issues).

# First steps

1. Open a terminal:
   * Windows: **Anaconda Prompt** if you installed with conda
   * Windows: Command Prompt or **PowerShell** if you installed with pip
   * Unix/maxOS: **Terminal**
2. Navigate to the Cell-ACDC folder with the command cd like you did when you installed it.
3. **Activate** the environment:
   * Conda: conda activate acdc
   * pip on Windows: .\env\Scripts\activate
   * pip on Unix/macOS: source env/bin/activate
4. Run the main launcher:
   * Windows: python main.py
   * Unix/macOS: python3 main.py