CDR Profiler

The CDR - Profiler is an innovative software tool designed to extend and enhance the traditional Cup-to-Disc Ratio (CDR) measurement used in ophthalmic imaging. Unlike conventional methods that typically provide a single vertical or horizontal CDR value, this tool offers a comprehensive profile of CDR values around the entire optic disc.

Installation

We'll use *Anaconda* to create a new Python environment and handle all the required dependencies.

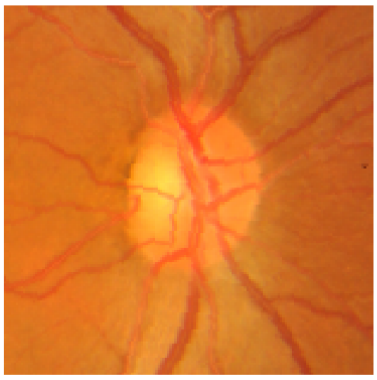
1. Install Anaconda following the official guidelines.
2. Clone this repo to your machine.
3. Open a new Anaconda terminal (Windows) or a normal terminal window (Linux/MacOS) and cd to the directory of the cloned repo: `cd <repo_directory>`
4. Open a new Anaconda terminal and create a new environment: `conda create -n pcdr python=3.12`
5. Activate your newly create environment: `conda activate pcdcr`
6. Install the required libraries to run CDR-Profiler: `pip install -r requirements.txt`
7. Install Pytorch using `pip`

Usage

1. Modify the configuration parameters found in `cfg/config.ini` to suit your needs.
2. Place all your images in the input folder you've set in the previous step. The software uses `data/` as the default folder to look for input images.
3. Run `main.py`
4. Check the ouput folder (default is `results/`) for the results. The folder should contain a file called `results.csv` with all the measurements. Images with the segmentations and CDR-Profiles will also be saved there if saving the result image is set as `True` in the config file.

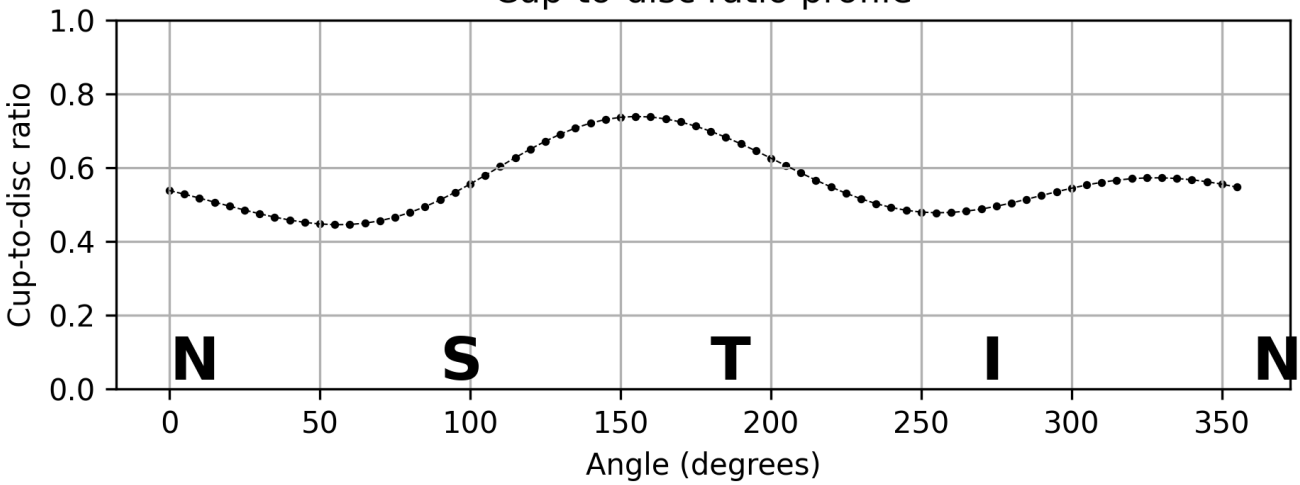
Sample results

Original image

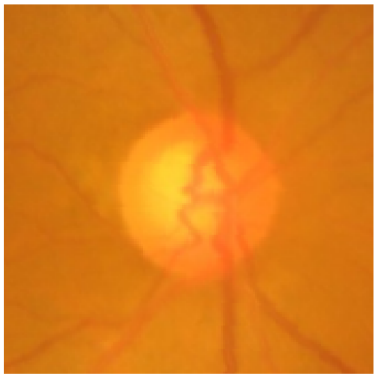


Cup & Disc segmentation

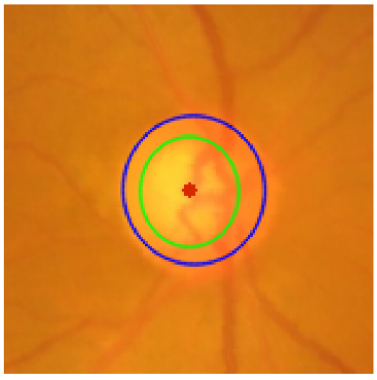
Cup-to-disc ratio profile



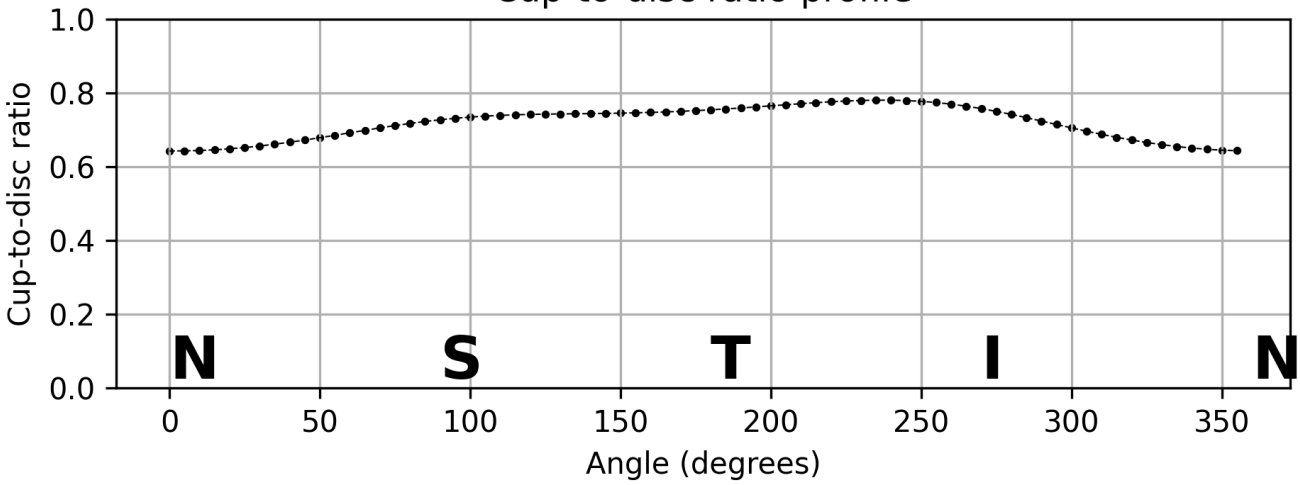
Original image



Cup & Disc segmentation



Cup-to-disc ratio profile



Disclaimer

Current implementation uses automatic segmentation of fovea, disc and cup. In future releases, the software will accept user generated masks.