AI-assisted Segmentation Workflow with AnyLabeling

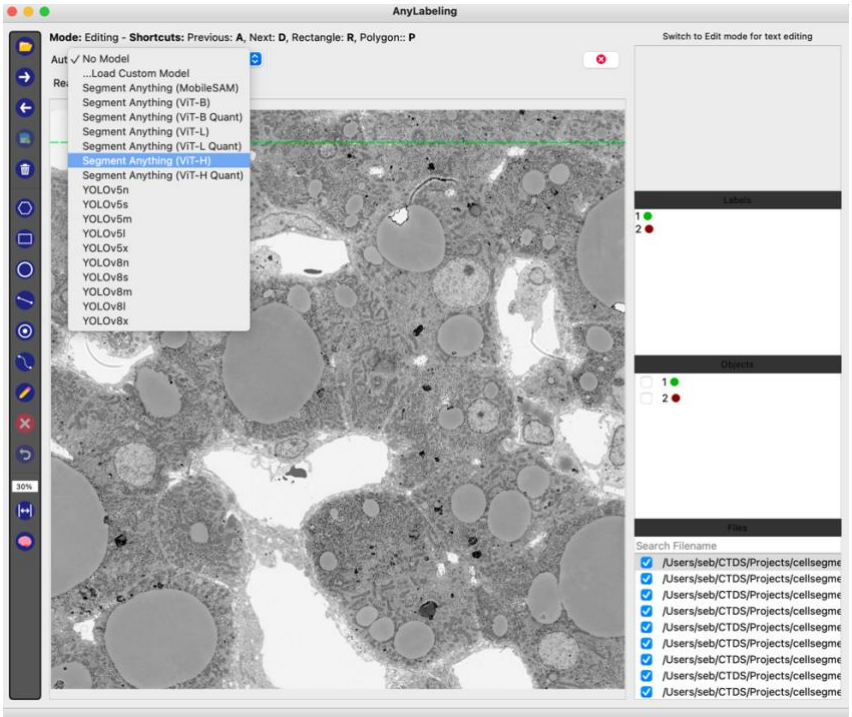
Software Description:

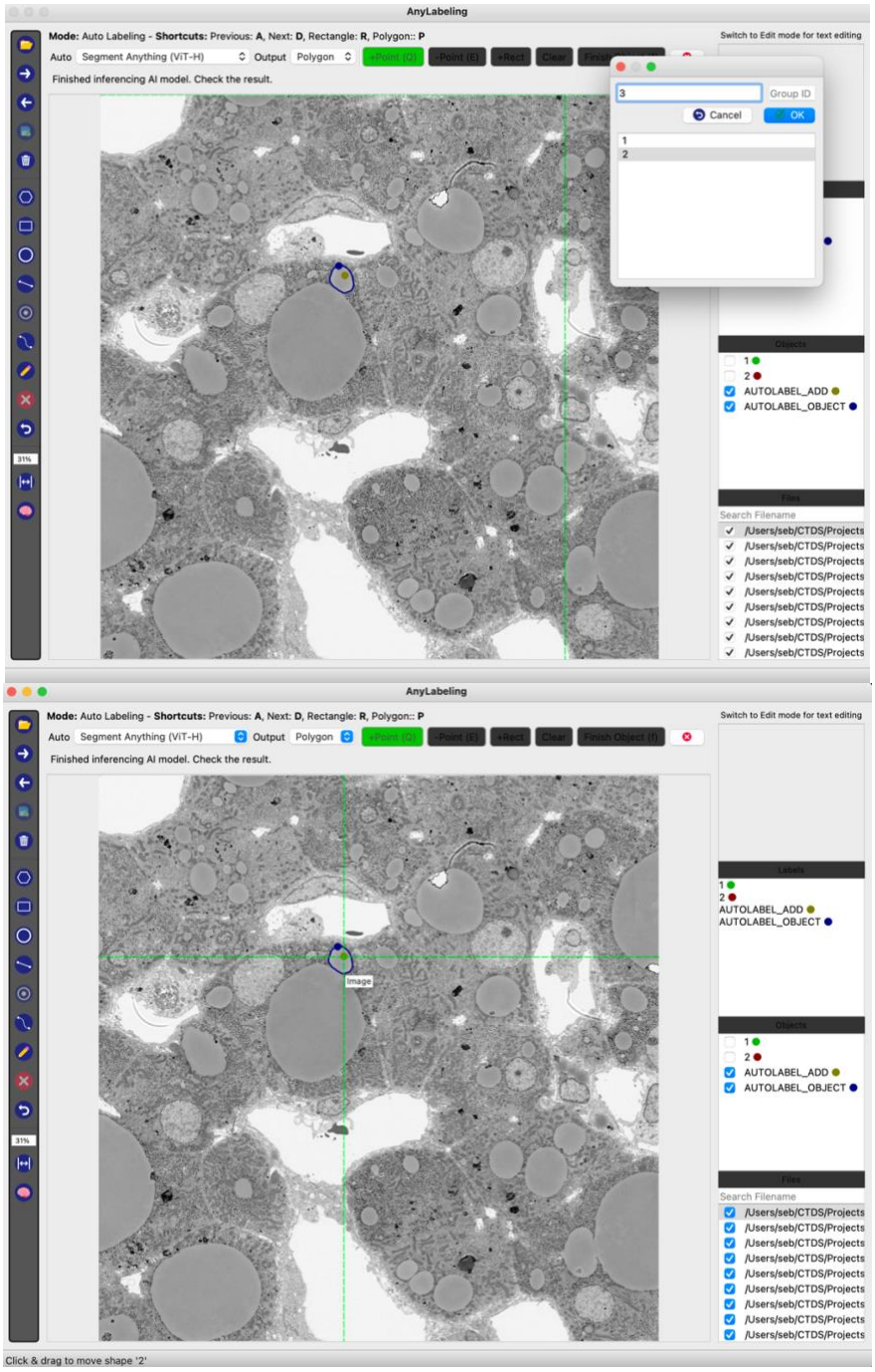
Anylabeling is an open-source software for interactive AI assisted segmentation of image stacks using Segment Anything Model (SAM) or YOLO models.
Advantages:

- ONE-point and click polygon segment generation using auto segmentation.
- Open-source and free, also available as binary installers
- Image annotation for polygon, rectangle, circle, line, and point.
- Export polygon labels in standard json format.

Workflow:

- install anylabeling (binary available for Mac, Windows, Linux with and w/o GPU): https://github.com/vietanhdev/anylabeling/releases
- align and convert images to png or jpg if necessary.
- split images in tiles depending on size of target organelle; tool: image2tiles.py
- open anylabeling software and load image folder (top left icon).
- select bottom icon on left side (brain icon) for AI-assisted segmentation.
- under auto-models (top panel), select Segment Anything (ViT-H). This will take a while to load for the first time.
- select output Polygon.
- then select +Point or +Rect to select cell organelle of interest. For the first time it will take a while to get results, but then it will be cached and faster.
- click "Finish Object" or press f to add label and add object to list.
- label next object or go to next image in image stack.
- polygons are automatically saved as json files in the same folder as the images.

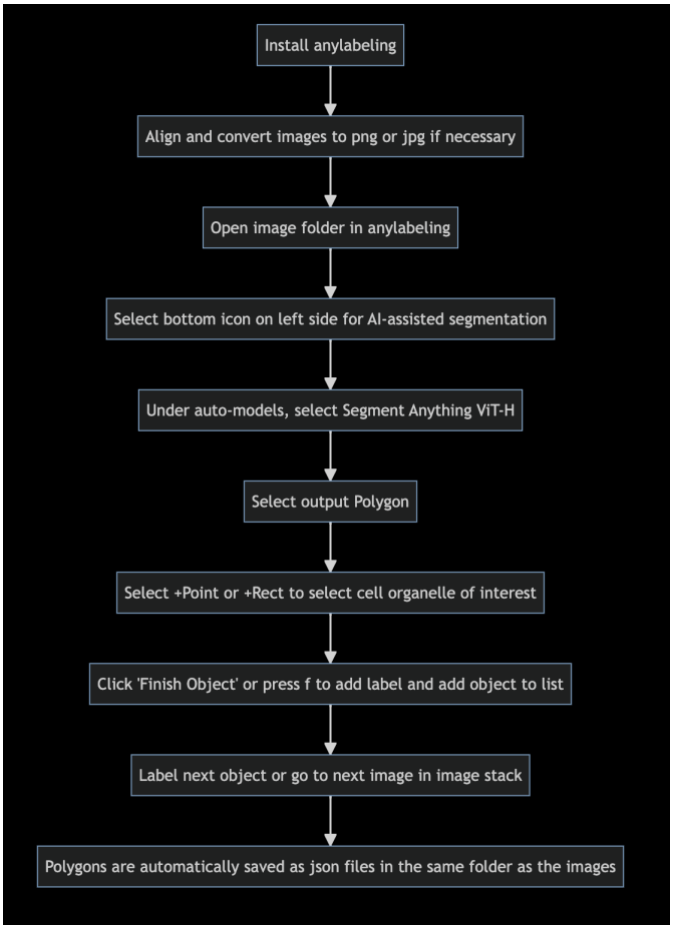




- optional: use anylabeling2tif.py to convert json files to tiff image masks, which then can be used to train Avizo AI segment model.

Alternative open-source labelling software packages:

- micro-SAM: https://github.com/computational-cell-analytics/micro-sam
- 3D Slicer: https://www.slicer.org/
- SAMM: https://github.com/bingogome/samm
- Seg3D: https://www.sci.utah.edu/cibc-software/seg3d.html



Workflow Overview