thresholded microscopy images to identify the one or more sets of pixels corresponding to independent cells; and

cropping the one or more sets of pixels from the plurality of thresholded microscopy images.

5. The method of claim **4**, wherein the exclusion criteria include one or more of width, height, aspect ratio, and circularity of the non-cell components in the plurality of thresholded microscopy images.

6. The method of claim **1**, wherein the one or more sets of pixels are extracted from the plurality of microscopy images using a process comprising:

applying one or more machine learning models to identify the sets of pixels in the plurality of microscopy images; and

cropping the one or more sets of pixels from the plurality of microscopy images.

7. The method of claim **6**, wherein the machine learning models comprise one or more of a probabilistic boosting tree model and a deep CNN.

8. The method of claim **1**, wherein the deployment of the classifier comprises one or more files describing (i) the multi-layer architecture, (ii) the plurality of weights, (iii) the plurality of image quality labels.

9. The method of claim **1**, wherein the plurality of microscopy images are digital holographic microscopy (DHM) images.

10. The method of claim **1**, wherein the plurality of image quality labels consists of two values indicating an in-focus image or an out-of-focus image, respectively.

11. The method of claim **1**, wherein the plurality of image quality labels comprise a range of more than two values between a minimum value indicating poorest image quality and a maximum value indicating best image quality.

12. (canceled) A computer-implemented method for performing adaptive focusing of a microscopy device, the method comprising:

acquiring a plurality of microscopy images depicting cells using a microscopy device;

extracting one or more sets of pixels from the plurality of microscopy images, wherein each set of pixels corresponds to an independent cell;

using a trained classifier to assign one of a plurality of image quality labels to each set of pixels indicating the degree to which the independent cell is in focus;

if the image quality labels corresponding to the sets of pixels indicate that the cells are out of focus, determining a focal length adjustment for adjusting focus of the microscopy device using a trained machine learning model; and

sending executable instructions to the microscopy device to perform the focal length adjustment.

13. (canceled)
14. (canceled)
15. (canceled)
16. (canceled)
17. (canceled)
18. (canceled)
19. (canceled)
20. (canceled)

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