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(54) Title: SYSTEMS AND METHODS FOR AUTOFOCUS AND AUTOMATED CELL COUNT USING ARTIFICIAL INTELLIGENCE

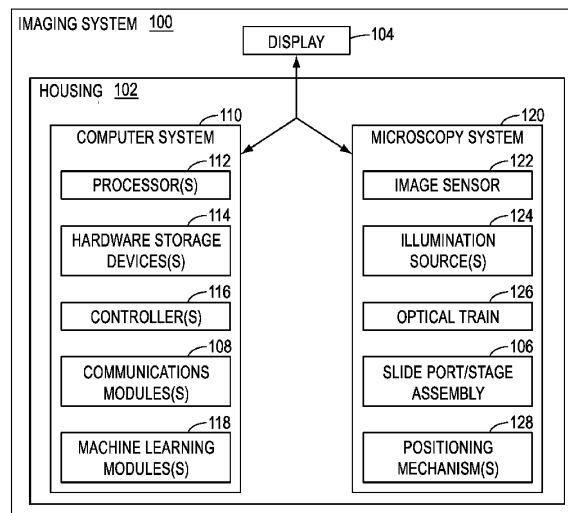


FIG. 3

(57) Abstract: Systems and methods for autofocus using artificial intelligence include (i) capturing a plurality of monochrome images over a nominal focus range, (ii) identifying one or more connected components within each monochrome image, (iii) sorting the identified connected components based on a number of pixels associated with each connected component, (iv) generating a focus quality estimate of at least a portion of the sorted connected components using a machine learning module, and (iv) calculating a target focus position based on the focus quality estimate of the evaluated connected components. The calculated target focus position can be used to perform cell counting using artificial intelligence, such as by (i) generating a seed likelihood image and a whole cell likelihood image based on output- a convolutional neural network and (ii) generating a mask indicative quantity and/or pixel locations of objects based on the seed likelihood image.

[Continued on next page]

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