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(54) Title: SYSTEMS CONFIGURED FOR AREA-BASED HISTOPATHOLOGICAL LEARNING AND PREDICTION AND METHODS THEREOF

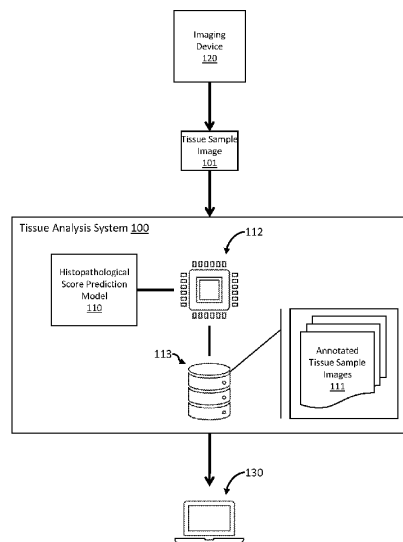


FIG. 1

(57) Abstract: Histopathological scoring can be based on the areas of certain types of cells or the expression of genotypic or phenotypic characteristics of those cells, as identified by a biological assay. Automating a scoring process with an image analysis algorithm includes correctly delineating the areas of interest, a process known as segmentation. The present systems and methods accomplish this segmentation using a generative adversarial network trained to generate masks covering each area of interest. The invention can perform both segmentation and classification by using a separate image band for each class. A scoring algorithm may utilize the classifications of, for example, a tumor area and an area of immune cell staining by interpreting the separate image bands of each area. Classification problems with more bands would use images with the equivalent number of bands. There is no limit to the number of bands an image can encode for each pixel.

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