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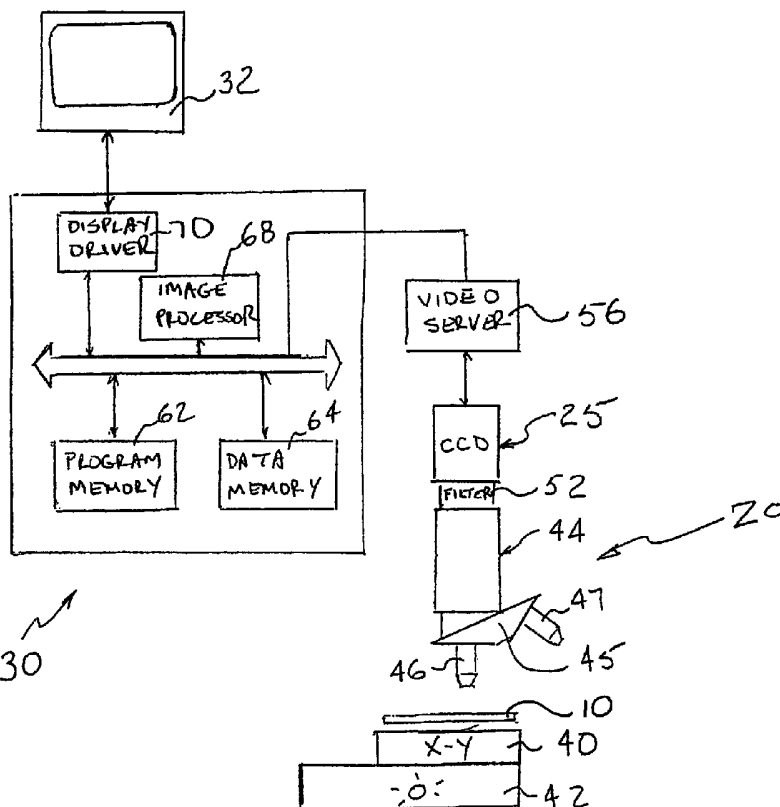
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[Continued on next page]

(54) Title: COLOR UNMIXING AND REGION OF INTEREST DETECTION IN TISSUE SAMPLES



(57) Abstract: In a method and system and machine-readable medium, colors in an image (200) are unmixed (202) using a matrix  $X = AS$ , where  $A$  is a  $n_s \times n_d$  matrix of spectral definitions, where  $s$  is the number of spectral components and  $d$  is the number of dyes into which the image is decomposed, and where  $S$  is a  $n_s \times l$  matrix of amounts of each dye at every pixel, where  $l$  is the number of pixels; the matrix  $X$  is constrained for solution by an unsupervised matrix decomposition method having constraints consistent with properties of an additive color model; and  $n_d$  is determined. A texture is determined to identify areas of interest. Further processing may automatically measure cell dye concentration in the determined regions of interest.

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US CL : 382/129,133,162,173,191,205				
According to International Patent Classification (IPC) or to both national classification and IPC				
<b>B. FIELDS SEARCHED</b>				
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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched				
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) East, West, IEEE, Google				
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>				
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
A	US 5,995,645 A (SOENKSEN, et al) 30 November 1999 (30.11.1999), See entire document.	1-29		
A,P	US 6,675,106 A (KEENAN, et al) 06 January 2004 (06.01.2004), See entire document.	1-29		
A	US 5,583,951 A (SIRAT, et al) 10 December 1996 (10.12.1996), See entire document.	1-29		
A	DOMNISORU, et al Filtering Technique for Fluorescence-Based DNA Sequencing Data, IEEE, July 2000, pages 489-493, See entire document.	1-29		
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;">           * Special categories of cited documents:            "A" document defining the general state of the art which is not considered to be of particular relevance            "E" earlier application or patent published on or after the international filing date            "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)            "O" document referring to an oral disclosure, use, exhibition or other means            "P" document published prior to the international filing date but later than the priority date claimed         </td> <td style="width: 50%; border: none;">           "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention            "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone            "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art            "&amp;" document member of the same patent family         </td> </tr> </table>			* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family
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