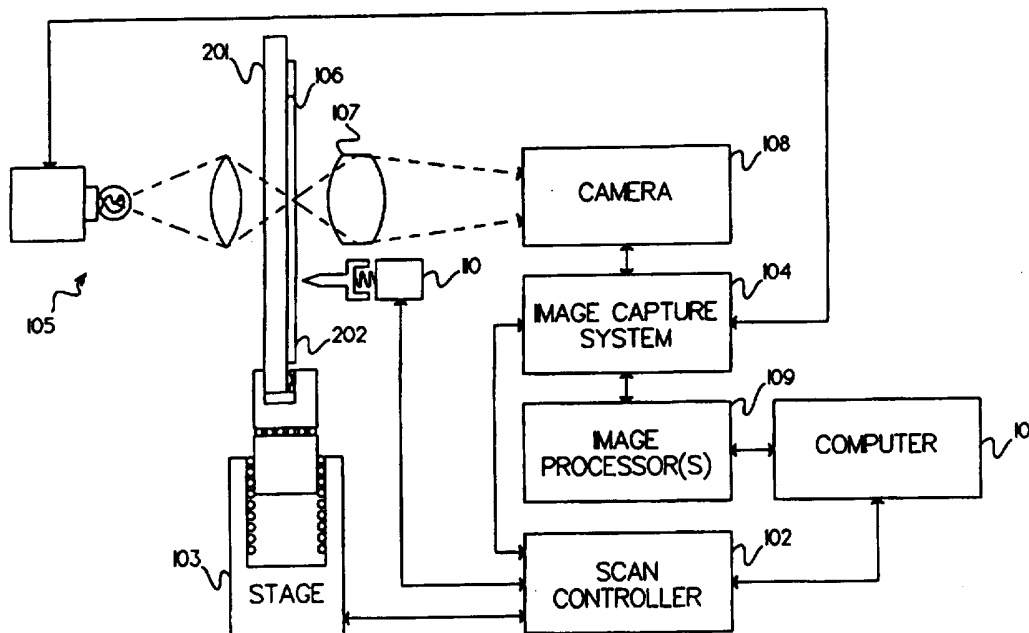




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<p>(21) International Application Number: PCT/US95/10133 (22) International Filing Date: 8 August 1995 (08.08.95) (30) Priority Data: 08/309,405 20 September 1994 (20.09.94) US (71) Applicant: NEOPATH, INC. [US/US]; 8271 154th Avenue N.E., Redmond, WA 98052 (US). (72) Inventors: FROST, Keith, L.; 15310 26th Avenue N.E., Seattle, WA 98155 (US). HAYENGA, Jon, W.; 21648 94th Place South, Kent, WA 98031 (US). STEPHANICK, James, A.; 8811 36th Avenue S.W., Seattle, WA 98126 (US). SCHMIDT, Robert, C.; 10014 161st Place N.E., Redmond, WA 98052 (US). (74) Agent: LEONE, George, A., Sr.; Leone & Moffa, P.A., Suite 1275, 601 Lakeshore Parkway, Minnetonka, MN 55305 (US).</p>		<p>(81) Designated States: AU, CA, JP, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i> (88) Date of publication of the international search report: 4 July 1996 (04.07.96)</p>

(54) Title: METHOD AND APPARATUS FOR AUTOMATIC FOCUSING OF BIOMEDICAL SPECIMENS



(57) Abstract

A method for automatically focusing on a slide includes the steps of locating a coverslip (401-411), acquiring images from predetermined focal depths in the slide (412), and starting at an initial focal depth proximate the surface of the coverslip (202). A set of predetermined characteristics within each of the images are measured (511) to generate at least one image measurement for each of the plurality of images. A focus measure is computed (511) for each of the images, where each focus measure is a function of at least one image measurement. A best focus location is determined (512) relative to focal depth where an acquired image has a highest focus measure.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US95/10133

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :G03B 13/36

US CL :382/255; 250/201.3; 348/349

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 382/255; 250/201.3, 201.7; 348/349,79,345,350,354,356

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)

APS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US, A, 5,287,272 (RUTENBERG ET AL.) 15 February 1994, col.6 line 50 to col.7 line 29, col.14 lines 9-19.	1-30
Y	US, A, 5,040,228 (BOSE ET AL.) 13 August 1991, abstract, col.1 line 66 to col.2 line 27.	1-30
Y	US, A, 5,003,165 (SARFATI ET AL.) 26 March 1991, col.1 lines 34-55.	1-30
Y	US, A, 4,899,194 (HORI) 06 February 1990, col.2 lines 10-68.	1-30
Y	US, A, 4,693,608 (KITAGAWA ET AL.) 15 September 1987, col.7 lines 1-5.	11, 12, 18, 28

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P document published prior to the international filing date but later than the priority date claimed	

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US95/10133

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US, A, 4,600,832 (GRUND) 15 July 1986, col.2 lines 45-50.	4, 6-9, 20-21, 24, 25, 30
A	US, A, 4,584,704 (FERREN) 22 April 1986, see entire reference	1-30
Y,P	US, A, 5,430,288 (SCHIELKE ET AL.) 04 July 1995, col.1 line 57 to col.3 line 7.	1-30