



US005946407A

United States Patent [19]
Bamberger et al.

[11] **Patent Number:** **5,946,407**
[45] **Date of Patent:** **Aug. 31, 1999**

[54] **SYSTEM AND METHOD FOR SCANNING MEDICAL IMAGES USING ADJUSTABLE EXPOSURE TIME AND BRIGHTNESS**

[76] Inventors: **Philippe Bamberger**, 28 Gidon St., Jerusalem, 93506, Israel; **Isaac Leichter**, 58/14 Ben-Zachai, Jerusalem, 93585, Israel; **Scott Fields**, 41/2 Hachayil, Jerusalem, 97891, Israel

5,084,911	1/1992	Sezan et al.	378/96
5,157,733	10/1992	Takeo et al.	382/6
5,163,102	11/1992	Yamazaki et al.	382/50
5,179,582	1/1993	Keller et al.	378/96
5,515,450	5/1996	Takeo et al.	382/132

Primary Examiner—Andrew W. Johns
Attorney, Agent, or Firm—Weil, Gotshal & Manges LLP

[21] Appl. No.: **08/811,783**
[22] Filed: **Mar. 6, 1997**

Related U.S. Application Data

[62] Division of application No. 08/289,381, Aug. 11, 1994, Pat. No. 5,854,851.

Foreign Application Priority Data

Aug. 13, 1993 [IL] Israel 106691

[51] **Int. Cl.⁶** **G06K 9/00**
[52] **U.S. Cl.** **382/132; 382/274; 382/318**
[58] **Field of Search** 382/132, 274, 382/318, 319; 128/922; 378/96, 98.7; 396/213, 236

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,955,067 9/1990 Shimura 382/62

[57] **ABSTRACT**

A system and method for diagnosis of living tissue diseases is described. The system includes a computer device for controlling its operation. An operator control device is coupled to the computer device. A viewing screen is coupled to the computer device for displaying digitized images of the living tissue. The operator, using the control device, selects desired portions of the digitized image for further image enhancement according to a desired image enhancement feature selectable from a plurality of image enhancement features. The image enhancement features include any combination of grey scale stretching, contrast enhancement based on logarithmic histogram equalization, spot enhancement and magnification. The system further includes means for visualization and quantification of micro-calcifications, and means for visualization and quantification of mass spiculations.

18 Claims, 16 Drawing Sheets

