US 20090262182A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2009/0262182 A1**

(43) **Pub. Date: Oct. 22, 2009**

Javidi et al.

(54) **THREE-DIMENSIONAL IMAGING APPARATUS**

(75) Inventors: **Bahram Javidi**, Storrs, CT (US); **Manuel Martinez-Corral**, Betera (ES); **Raul Martinez-Cuenca**, Torrente (ES); **Genaro Saavedra-Tortosa**, Manises (ES)

Correspondence Address:
CANTOR COLBURN, LLP
20 Church Street, 22nd Floor
Hartford, CT 06103 (US)

(73) Assignees: **THE UNIVERSITY OF CONNECTICUT**, Farmington, CT (US); **THE UNIVERSITY OF VALENCIA**, Valencia (ES)

(21) Appl. No.: **12/251,966**

(22) Filed: **Oct. 15, 2008**

Related U.S. Application Data

(60) Provisional application No. 60/980,105, filed on Oct. 15, 2007.

Publication Classification

(51) **Int. Cl.**
H04N 13/02 (2006.01)
G02B 13/22 (2006.01)
G02B 27/12 (2006.01)

(52) **U.S. Cl.** **348/46**; 359/663; 359/626; 348/E13.074

(57) **ABSTRACT**

A three-dimensional imaging apparatus for imaging a three-dimensional object may include a microlens array, a sensor device, and a telecentric relay system positioned between the microlens array and the sensor device. A telecentric relay system may include a field lens and a macro objective that may include a macro lens and an aperture stop. A method of imaging a three-dimensional object may include providing a three-dimensional imaging apparatus including a microlens array, a sensor device, and a telecentric relay system positioned between the microlens array and the sensor device; and generating a plurality of elemental images on the sensor device, wherein each of the plurality of elemental images has a different perspective of the three-dimensional object.