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Lee et al.

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(54) **DUAL-SPECTRUM HEAT PATTERN SEPARATION ALGORITHM FOR ASSESSING CHEMOTHERAPY TREATMENT RESPONSE AND EARLY DETECTION**

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(57) **ABSTRACT**

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H01L 25/00 (2006.01)

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(58) Field of Classification Search 382/100, 382/103, 106-107, 128, 129, 130, 131, 132, 382/133, 134, 162, 168, 173, 181, 199-201, 382/219-222, 232, 254, 274, 276, 295, 305, 382/312; 250/370.08, 353, 330; 600/473; 264/430

Infra-red images of tumors carry the information of normal and cancerous tissues in every pixel. We developed a Dual-Spectrum Heat Pattern Separation (DS-HPS) algorithm to quantify the energy from the area of the high temperature tissues, called q_H map, and decompose the body surface into the high and normal temperature areas based on a pair of middle-wave Infra-red images and long-wave Infra-red images. Further, with longitudinal registration, we can detect the cancerous tissues and assess the chemotherapy treatment response on a pixel by pixel basis according to the change of the q_H map derived by the DS-HPS algorithm. The preliminary result shows the area and the q_H values in the high temperature area are decreased as the patients receive more chemotherapy. These suggest the proposed algorithm could capture the incremental or decremental of the energies emitted by the cancerous tissues, which has the potentials for chemotherapy assessment and early detection.

See application file for complete search history.

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19 Claims, 5 Drawing Sheets

