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**Li et al.**

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(54) **WHITEBOARD DISPLAY**

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(58) **Field of Classification Search**

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2011/0227827 A1\* 9/2011 Solomon ..... G06F 3/0321 345/158

\* cited by examiner

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(57) **ABSTRACT**

A method includes receiving an image of a display surface from a pointing device having a camera with a field of view wider than a tip of the pointing device, processing the received image to identify an area on the display surface within the field of view of the camera, and identifying a position of the tip of the pointing device on the display surface as a function of the identified area on the display surface.

**18 Claims, 5 Drawing Sheets**

