Low-cost Image-guided Navigation and Intervention Systems Using Cooperative Sets of Local Sensors

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Technology description

The BeeSpaceMouse is an enabling technology for the tracking of ultrasound probes and other imaging devices. Combining ultrasound imaging with image analysis algorithms, probe-mounted cameras, and very low-cost, independent optical-inertial sensors, it is possible to reconstruct the position and trajectory of the device and possible tools or other objects by incrementally tracking their current motion. This opens up several possible application scenarios that previously required expensive, imprecise, or impractical hardware setups. Examples are the generation of freehand three-dimensional ultrasound volumes without the need for external tracking, 3D ultrasound-based needle guidance without external tracking, or localization and trajectory reconstruction for wireless capsule endoscopes over extended periods of time. The same set of sensors enables interactive, in-place visualization using additional projection components. Such devices allow imaging procedures with improved sensitivity and specificity as compared to the current state of the art.

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