COMPUTATIONAL CHALLENGE IN ACCELERATING THE COUPLED FILTERING METHOD FOR ULTRASOUND IMAGE-BASED TISSUE DEFORMATION ANALYSIS

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In ultrasound image-based tissue deformation analysis, feature-motion decorrelation causes feature tracking results fail to represent the underlying true tissue deformation. When tissue undergo large deformation, the relative estimation error can be as large as over 200 percent. We have proposed a coupled filtering method to solve the feature-motion decorrelation problem. It has shown superior performance over previous methods, reducing the relative estimation error down to 2-3 percent [1].

The coupled filtering method is computationally intensive. Even with hardware-based acceleration such as GPU and FPGA implementation [2], it is still challenging to apply the coupled filtering method in real-time clinical setting. In this symposium, I like to draw your attention to this computational challenge and hopefully some colleagues are willing to work with us together to solve this problem.

The earlier results [1,2] are joint work with my former students Dr. Tianzhu Liang, Ling Sing Yung, Chen Zhang and my colleague Prof. Philip Mok at HKUST.

References
