



Thesis Title	Optical Flow Estimation Using Framelet Transform
Research Field	Digital Signal Processing
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Abstract	
<p>The relatively new field of framelet shows promise in removing some of the limitations of wavelets. Framelet offers more design options and hence can combine most desirable transform features. In this thesis, several algorithms for computing advanced transforms are proposed. First, a fast procedure for computing 1-D, 2-D, and 3-D framelet transforms is introduced. In addition, a modified procedure for computing 2-D and 3-D framelet transforms are given. Furthermore, the inverse procedure of all the four mentioned transforms for multi-dimensional cases are verified.</p> <p>An approach is developed for computing the optical flow in the differential framework for global model. This is achieved using schemes for the computation of the spatio-temporal derivatives using 4-points central filter or 2×2 spatio-temporal filter, as well as being simple, accurate and faster than those previously proposed conventionally.</p> <p>A fast approach for optical flow estimation is proposed and employed using 2-D and 3-D framelet domain for global model.</p> <p>Algorithms and techniques developed in this thesis are utilized and organized to be implemented in MATLAB package V. 7.0. The MATLAB package is employed on Intel mobile Pentium 4, 3.06 GHz, 512 Mbyte RAM computer.</p> <p>With differential methods, observe that the 2-D framelet based optical flow algorithm. With 2×2 spatio-temporal derivative filter, performed better than the other proposed algorithm with Mean Error (0.0361) and Standard Deviation (0.0911).</p>	
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