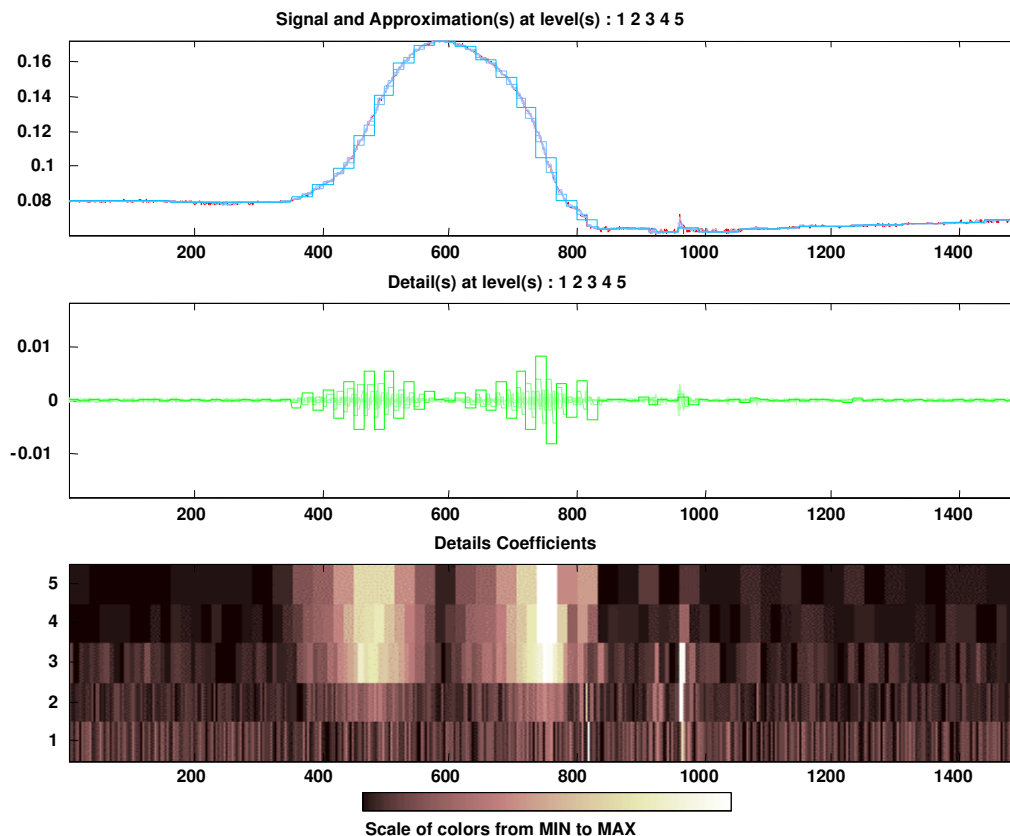


Pain, M.T.G. 2003. Identifying reaction times in sprint starts: a comparison of wavelet analysis and custom algorithms. *International Journal of Computer Science in Sport*, 2 (2), 129-131.

The aim of this study is to develop an automatic detection system to identify the earliest possible onset of active, responsive force to an auditory stimulus in a sprint start by utilizing detection techniques that also use non-localized information. To test the accuracy of the detection method simulated signals and real trial signals were used (Staude, 2001). Six types of simulated force traces were developed that consisted of a baseline component and a rising force component with equivalent signal content to real sprint start force traces to determine detection accuracy. Random noise of 1% and 5% were added to each simulated signal. The errors in detecting the onset of the rising force in simulated trials for: the custom algorithm, discrete wavelet analysis, (Haar wavelet), continuous wavelet analysis (Daubechis 2 wavelet), threshold of 3 standard deviations, and skilled subjects observations, were calculated. The human estimate was generally comparable to the custom software and discrete wavelet analysis. In nearly all cases for the real sprint trials the quickest reaction time is given by the human estimate then by the custom algorithm. A fast reacting force detection system has been developed that can determine the onset of the active, responsive force of a sprint start with a very low detection threshold even in noisy environments. To be successful the identifying algorithms needed to use information that is not localized in time.



Discrete wavelet analysis of a sprint start.