The paper in question

Despite on the great challenge, over the past 10 years the research on the anomaly detection of time series has been a topic acquiring increasing attention, and quite a few techniques have been proposed. These techniques were experimentally proven to be effective in some cases, while they can fail in other cases. …. A wavelet-based signal trend shift detection method is proposed in [18]. Nevertheless, this method cannot detect short abnormal patterns embedded in normal signals. An interesting idea for novelty detection, inspired by the negative-selection mechanism in the immune system, was proposed in [4]. However, this method can fail when the negative set goes to null with the increasing diversity of the normal set. Another **method** for target time series novelty detection, **called TARZAN** [10], i**s based on converting the time series into a symbolic string. However, the procedure for** discrediting and **symbolizing real values in time series**, as well as the various choices of string-representation parameters, **can** cause **the loss of meaningful patterns in the original time series**.

Paper [a] by Ma, J. Perkins, S. 2003 Despite its technical challenge, in the past over ten years novelty detection is a topic acquiring increasing attention, and a number of techniques have been proposed and investigated to address it. These techniques were experimentally proved to he effective in some cases, while they can fail in some other cases due to the assumptions and or processes upon which they are based. ... A wavelet based signal trend shift detection method is proposed in [9]. Nevertheless, this method cannot detect short novel patterns embedded in normal signals. An interesting idea for novelty detection, inspired by the negative-selection mechanism of the immune system, was proposed in [IO]. However, this method can potentially fail because the negative set will go to null with the increasing diversity of the normal set. The **method, called TARZAN**, proposed in [I l l **is based on converting the time series into a symbolic string. However, the procedure for discretizing and symbolizing real values in time series can** potentially **lose meaningful patterns in the original time series**. The method presented in [15] is, strictly speaking, not novelty detection algorithm, because it requires knowing what kind of novelty is expecting

The paper in question: Firstly, we are not interested in finding individually outlier data points, but interested in finding anomaly patterns, i.e., combination of data points whose structure and frequency somehow defies our expectations.

Keoghs Text: However we are not interested in finding individually surprising datapoints, we are interested in finding surprising patterns, i.e., combinations of datapoints whose structure and frequency somehow defies our expectations.

The questioned paper: Detail coefficients are generated by a wavelet function which is a high-pass filter. The high-pass filter allows the high-frequency components of a signal through while suppressing the low-frequency components. For example, the differences that are captured by the Haar wavelet function represent high-frequency change between an odd and an even value. The scaling function produces a smoother version of the data set, which is half the size of the input data set. Wavelet algorithms are recursive and the smoothed data becomes the input for the next step of the wavelet transform.

Ian Kaplan, July 2001 Detail coefficients are generated by a wavelet function which is a high-pass filter. The high-pass filter allows the high-frequency components of a signal through while suppressing the low-frequency components. For example, the differences that are captured by the Haar wavelet function represent high-frequency change between an odd and an even value…. The scaling function produces a smoother version of the data set, which is half the size of the input data set. Wavelet algorithms are recursive and the smoothed data becomes the input for the next step of the wavelet transform.

The questioned paper: There are a wide variety of popular wavelet algorithms, including Daubechies wavelets, Mexican Hat wavelets and Morlet wavelets... But they have the disadvantage of being more expensive to calculate than the Haar wavelets, so we adopt the Haar wavelets.

Paper [a] Sahu, R., and P V Sanjeev (2007),There are a wide variety of popular wavelet algorithms, like Daubechies wavelets, Mexican Hat wavelets and Morlet wavelets. The present work adopts DWT using Haar wavelet as the mother wavelet as it is the simplest and comparatively computationally less intensive.

The paper in question: Wavelet transform (WT) or discrete wavelet transform (DWT) has been found to be effective in replacing DFT in many applications in computer graphics, image, speech, and signal processing [15]. We apply this technique to dimensionality reduction for time series.

Chan and Fu 1999:Wavelet Transform (WT), or Discrete Wavelet Transform (DWT) [9, 18] has been found to be effective in replacing DFT in many applications in computer graphics, image [26], speech [1], and signal processing. We propose to apply this technique in time series for dimension reduction and content-based search