

Evaluation of Children's Anthropometric Features Using Wavelet Decomposition

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The assessment of growth data is an important part of the paediatric consultation. The measurements of weight and height can be charted and compared to reference values obtained from normal population. These measurements are useful to evaluate and track the growth of children because they provide an overall impression of the child's health. This data is usually displayed as a series of percentile curves in order to show the distribution of body measurements.

In this paper, an adaptive method to approximate unorganized clouds of points by smooth curve based on wavelets is described. The general fitting algorithm operates on a coarse – to – fine basis and selects on each refinement level in a first step a reduced number of wavelets, which are appropriate to represent the features of the data set. In a second step, the fitting curve is constructed as the linear combination of the wavelets that minimizes the distance to the data in a least squares sense. This is then followed by a thresholding procedure of the resulting wavelet coefficients to discard those, which are too small to contribute much to the curve representation. In order to reduce computational costs, we use only a level of decomposition, which is useful enough for most of the paediatric data.

In order to obtain data-driven graphics in a web-based medical record, we had to analyze other graphic formats that surpass the well known GIF and JPEG. SVG (Scalable Vector Graphics) is a XML-based web development tool and graphic format. It is ultra compact and standard compatible; separating the graphic from its original data allowing low consumption of web resources. Being a XML-based standard, SVG drawings can be interactive and dynamically generated, creating high-quality medical graphics from real-time data in a clear and fast way with excellent structure, with the possibility of displaying them on the web or email them as a small attachment files.

Conclusions: The use of wavelets for curve smoothing and SVG graphic format are a useful way of displaying children's growth curves on a web-based platform.

Creation of a Web-Based DRG Grouper

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The DRG (Disease Related Groups) is an inpatient episodes classification system, designed for prospective payment, but it's also used for medical management and epidemiological description of inpatient services.

A DRG is assigned to each inpatient episode, as the result of the combination of the primary diagnosis, additional diagnosis and complications, and all the procedures that occurred during that episode. All these diagnosis and procedures must be coded with ICD-9-CM, and using a standardized method the correspondent DRG is assigned.

There are a little more than 500 groups in the DRG classification, so it's usefulness resides in the power of summing up from multiple ICD-9-CM codes, picked from a list of more than 14.000 codes to a