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Algorithmic conversion of data displayed on a weekly basis to the monthly level using the spreadsheet

Marko Martinović[a]*, Marija Stoić[a], Miroslav Duspara[b], Ivan Samardžić[b], Antun Stoić[b]

[a]*College of Slavonski Brod, Dr. Mile Budaka 1, 35000 Slavonski Brod*

[b]*Mechanical engineering Faculty in Slavonski Brod, Trg I.B. Mazuranic 2, 35000 Slavonski Brod*

Abstract

This paper presents an algorithmic conversion process of data written on a weekly basis in the format of data on a monthly basis, including all the data specifics. The aim is to graphically and numerically display the results of the conversion and the size of the errors that is the time running. The main method used for averaging data is average data value. Research shows that the conversion error, ie. loss of the original value is below 2.5%.

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1. Introduction

The present work describes the process of aggregation or conversion of data between the two data sets. As a source of input data for this study, the data from the Google Trends service were used. These data show trends in the use of certain keywords or phrases within the Google search engine. [1]

In certain cases there is a need to adapt the original data for input into the appropriate computer procedures and calculations [2]. If the input method for processing of data accepts the modified source data, the same data needs to be adjusted to make the smallest error. If the data are not well adapted, conversion error increases. This paper describes the process of conversion where necessary from larger, show fewer data using the method of compression or aggregation. Used aggregation functions, ie. More compression of data points in a single point between two different time frame is a weighted average.

Furthermore, there will be described a process of converting data presented with a weekly to a monthly level. For example, when calculating seasonal phenomenon frequently used data on a monthly and the original data are recorded on a weekly. Although at first glance you might not see the complexity, data conversion computer requires a set of algorithmic steps to final solution.

Source data can be retrieved in two ways, directly from the website using JavaScript code and through the "CSV" input file [5]. Data downloaded via HTML code are "finished" aggregate monthly data that GoogleTrends used to display the graph in a browser, and are still used to work for the "benchmark", ie. The accuracy of comparison between the results obtained. Another way to reach is by "CSV" file format, which is the original data displayed on a weekly basis, and used as input to the algorithm. Further, it will be made a comparison between the original and the results obtained from the evaluation of errors. As a tool for the

* Corresponding author. Tel.: +385914928010
E-mail address: mmartinovic@vusb.hr

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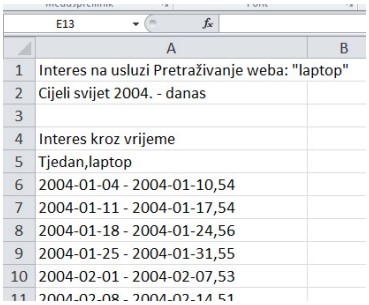
implementation of the algorithm will use the spreadsheet "Excel", so that all of these functions are shown as steps of the algorithm.

2. Materials and methods

Format of data to be processing and display is in two forms, the first is the entry "CSV" format, and the second represents the data obtained directly from the graph web browser. Presented graph assumes monthly data using the "JavaScript", which is located in the source code shown in the website, this is the same used for the loading of data from the Web into a database. Input "CSV" formats are shown in Table 1.

Table 1: Table overview of the original form data exported in " CSV " format. [1]



	A	B
1	Interes na usluzi Pretraživanje weba: "laptop"	
2	Cijeli svijet 2004. - danas	
3		
4	Interes kroz vrijeme	
5	Tjedan,laptop	
6	2004-01-04 - 2004-01-10,54	
7	2004-01-11 - 2004-01-17,54	
8	2004-01-18 - 2004-01-24,56	
9	2004-01-25 - 2004-01-31,55	
10	2004-02-01 - 2004-02-07,53	
11	2004-02-08 - 2004-02-14,51	

Records of information within the base are stored into the rows of the table. Originally CSV means "Comma Separated Value" - values delimited with a comma. The used program for interpretation of input data and for all budgets over them is MS Excel (spreadsheet).

On the chart 1 shows the original loaded value on a weekly basis and the original monthly values obtained through java script, from January 2004 to March 2016.

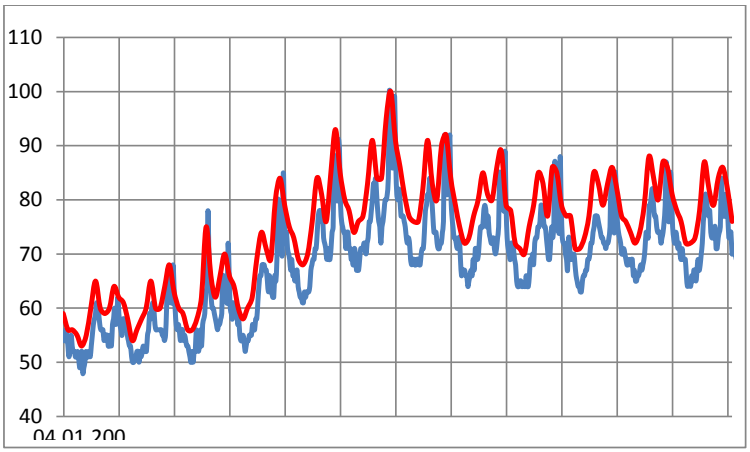


Figure 1. Display the original data from 01.01.2014. to 03.01.2016.

Weekly record is 637, and the monthly 146. They are together on the same Figure with a scale of 637, where he used interpolation monthly values between the points of the scale. The original monthly data downloaded from the website but are rounded to whole numbers for the sake of simplicity of presentation that introduces additional error. Comparison error budget will mainly be carried out on the original and the converted data, and will eventually be made, and comparison with data taken from Google Figure.

Before starting treatment, the data has to be adapted for computing. Data from the "CSV" is imported in the first column of the table. The first five lines represents a header, while from the sixth to the 643 line are the original records. According to Table 1, the structure of a single track in the column A is a form of "2004-01-04 - 2004-01-10,54", and presents a set of characters from