University of Zurich[UZH]

Department of Informatics

University of Zurich
Department of Informatics
Binzmühlestr. 14
CH-8050 Zürich
Phone. +41 44 635 43 11
Fax +41 44 635 68 09
www.ifi.uzh.ch/dbtg

UZH, Dept. of Informatics, Binzmühlestr. 14, CH-8050 Zurich

Roger Sneider
s89-708-903
Schulhausstrasse 4
5103 Möriken
Switzerland

Prof. Dr. Michael Böhlen
Professor

Phone +41 44 635 43 33
Fax +41 44 635 68 09
boehlen@ifi.uzh.ch

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Survey of Peaks/Valleys identification in Time Series

Vertiefung thesis (6 CP):

Work overview:

The aim of the basis module is to get started with the recovery of missing values field. The accuracy of a recovery method is optimal if all the trends of the data are preserved. In this thesis, we are interested in studying the preservation of peaks and valleys. The theoretical part of the thesis will give an understanding of the techniques used to identify peaks and valleys in time series. The practical part of the thesis will be to apply one peaks/valleys identification technique from the literature on the result of our tool REBOM described in: `http://www.ifi.uzh.ch/dbtg/sw/rmvtp.html`.

Work tasks:

1. Literature research on peaks and valleys identification methods
2. Write a report of max 15-18 pages in which you:
   - Describe the different methods proposed for the identification of peaks and valleys in time series
   - Enumerate the cases where REBOM preserves the peaks and valeys and the cases where it does not.
   - Propose synthetic examples that show the different possibilites to choose the dimensions of REBOM in order to optimize the preservation of the peaks and valleys
3. Presentation of results (10 minutes)
4. Oral exam

Literature:

1. Fujimoto, Y., and Tsutsui., S., *A Peak Shape Identification Genetic Algorithm with Radial Basis Function*, in IEEE, 1997
2. Nopiah, Z.,M., and al *Peak-Valley Segmentation Algorithm for Fatigue Time Series Data*, in WSEAS, 2008
3. Palshikar, G.,K., *Simple Algorithms for Peak Detection in Time-Series*

Task assignment and supervisor:

- Mourad Khayati

Starting date of thesis: 03/03/2011

Ending date of thesis: 03/05/2011

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Prof. Dr. Michael Böhlen
Professor