

A Skeleton Based Binarization Approach for Video Text Recognition

Haojin Yang, Bernhard Quehl, and Harald Sack

Problem

Typically, video text is embedded in rather heterogeneous background with low contrast ratio, which makes it difficult to be recognized by means of standard OCR software. Therefore, text pixels have to be separated from background beforehand by applying appropriate binarization techniques.



Seed selection procedure works as follows: if light text on dark background then $S_p > T_{mean} + \sigma \wedge S_p \leq T_h$ if dark text on light background then $S_p < T_{mean} - \sigma \wedge S_p \ge T_l$ Let T_h , T_I , and T_{mean} denote the hightest, lowest, and mean grayscale value of all skeleton pixels, whereas S_p denotes the grayscale value of

Seed-region Growing

Florian Kurz Seed image



seed pixels. σ is a variance factor.

Seed regions are recursively extended in north, south, east, and west directions until text boundaries are reached.

Binarization Result Florian Kurz

Solution

In this paper, we propose a new method for video text binarization. Unlike traditional approaches, we utilize image skeleton and edge

maps to detect the text pixels.

- We first analyze the distribution of image skeleton maps in order to estimate the text gradient direction which is necessary to determine whether there is light text on dark background or vice-versa.
- Subsequently, we calculate the average grayscale value of skeleton pixels, which are extracted in the correct text gradient direction.
- Making use of this value the seed selection process can be applied followed by a seed region growing algorithm by which seed regions are recursively extended in four directions until text boundaries are reached.

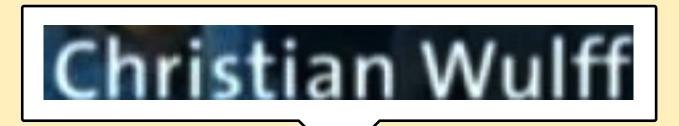
Result



Science



Simon



Christian Wulff







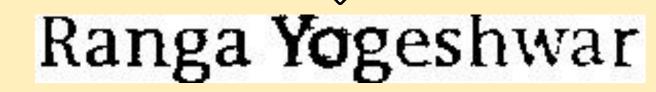
























Kundus

Department



午後5時す

827240C



fax:

Contact

Haojin Yang, Bernhard Quehl, Harald Sack

@hpi.uni-potsdam.de

+49 (0)331-5509-548

+49 (0)331-5509-325

http://www.yovisto.com/labs/VideoOCR/

Prof.-Dr.-Helmert Str. 2-4, 14467 Potsdam, Germany

{haojin.yang, bernhard.quehl, harald.sack}

Hasso-Plattner-Institute (HPI)

for IT-Systems Engineering

