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Progress report by Regensburg University Library on their experience with the automatic book scanner ScanRobot®

Foreword

In January 2009 Regensburg University Library expanded its digitization hardware by a ScanRobot® from the company TREVENTUS Mechatronics GmbH. This acquisition was connected with high expectations of the scanning quality and scanning speed. Just ten months after its procurement Regensburg UL is taking stock for the first time.

The digitization center of Regensburg UL, in which the ScanRobot® will also be used, digitizes a wide range of different media, including books, audio data media and video films. At the multimedia center the University Library offers a variety of possibilities for the self–service digitization of books and other media. In addition to this, members of the university can also place orders for their digitization wishes. In its capacity as a partner library of the EU project eBooks on Demand (EOD) Regensburg UL also offers electronic books worldwide at the option of the user. Digitization on behalf of other institutions is currently being set up as a new service. At present a total of seven people are employed so that this wide range of services can be performed speedily and to a high level of quality. From the commencement of digitization activities in 1997 up to the present day a total of 5 Tbytes of data have been generated, some of which have been made available to the public. The ScanRobot® has contributed a round 1 Tbytes to this figure since January 2009.

Experience with the ScanRobot® from the company TREVENTUS Mechatronics GmbH
Material to be scanned

At the digitization center the ScanRobot® is used for the digitization of orders placed by lecturers and scientists, for the eBooks-on-demand service and for project-based, factually outlined corpora. Due to the fact that the orders come from various sources the material to be scanned is heterogeneous in terms of the book dimensions and book properties and even varies greatly within orders. Books from between the 16th and 21st centuries with every kind of paper and binding quality are digitized. The concentration, however, is on books from the 19th century.

Scanning time

The experience of Regensburg UL with the ScanRobot® shows, thanks to the high degree of flexibility of this scanning technology, that most types of book (book dimensions, thickness of the binding, paper quality,...) can be digitized. With this wide degree of deployability clearly higher scanning throughputs can be achieved with increased quality using the ScanRobot®. The daily net throughput was able to be increased to 8-times the previous throughput.

At present digitization is being performed with the ScanRobot® 40 h per week. Due to the heterogeneous documents the entire book exchange process (completion of the existing order; book change; complete creation of the new order) takes between 4 and 5 minutes per book. However, as the experience of the operators increases we expect this to be shortened by approx. 1 minute. If the material is homogeneous, the setup time is also shortened.

The image-taking technique

The unique image-taking and page-turning technique of the ScanRobot® shows its benefits in particular with thick books. Due to the fact that the scanning head moves into the book and the pages are raised by a slight current of air, the pages can be scanned away from the book fold, absolutely distortion-free and without any shadows. Practice shows that this is possible up to just a few mm into the fold.

The ScanGate™ software

The software provided by TREVENTUS Mechatronics GmbH for control of the ScanRobot® and for processing the images has been convincing in every way up to now.
It provides comprehensive scan setting facilities, extending from image processing to file management. In addition a very short familiarization period is ensured thanks to the clear layout and logical design of the operator interface.
At the present time it represents a considerable work alleviation and an improvement in the post-processing and file management for the Regensburg UL.

Process acceleration

Further turning of the pages after scanning is only necessary in very seldom cases thanks to the patented image-taking technique and perfected software. The image-taking technique of the scanner described above achieves uniform (the lighting is homogeneous over the entire page) and absolutely distortion-free (none of the typical arching in the center of the book) scanning of the book's pages. Due to this any later distortion correction of the pages by means of software is dispensed with, which in turn leads to a time gain and a higher daily net throughput. In terms of the result, distortion-free image-taking is far superior to any later distortion correction of arched pages by means of software. It also has a positive effect on the results of optical character recognition.

Summary

Through the acquisition of the ScanRobot® from the company TREVENTUS Mechatronics GmbH the Regensburg UL has been able to considerably increase and expand its digitization service and therefore its range of services. The image quality of the scans also meets expectations, e.g. relating to the scanning throughputs achieved. For the reasons mentioned above procurement of the ScanRobot® has been a successful investment from the viewpoint of Regensburg University Library.