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Technical Approaches to Manuscript Analysis and Reconstruction

Abstract

Digital imaging for ancient documents has gained significant interest in recent years. It opens new possibilities in preserving, analyzing and presenting the content of cultural heritage. Using multispectral imaging techniques in combination with digital image processing allows, on the one hand, enhancing the readability of palimpsests and disappeared or damaged text due to environmental effects like mold, humidity or fading of ink; and, on the other, the automated investigation of the structure and content of manuscripts. This paper reports an interdisciplinary project of philologists and computer scientists devoted to the recording, investigation and editing of three medieval Slavonic manuscripts of extraordinary importance. First of all, the project deals with the development of techniques for the recording, registration and combination of multispectral images. The main goal in collecting the multivariate image data is to increase the readability of the written text. The results of the enhanced images are used for subsequent computer aided procedures, e. g. the segmentation of the ruling (line structure), a computer aided script description and stroke analysis as well as the deciphering and reconstruction of the script. The algorithms developed aim at performing these tasks more precisely and faster for philologists.