BABEŞ-BOLYAI UNIVERSITY CLUJ-NAPOCA

FACULTY OF MATHEMATICS AND COMPUTER SCIENCE

SPECIALIZATION Computer Science

DIPLOMA THESIS

Handwritten text recognition techniques applied on English-Romanian texts

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ABSTRACT

This work is an attempt to address the handwritten text recognition (HTR) problem using a deep learning approach. The solution recipe involves three steps: text line segmentation performed by a fused U-Net-LSTM model, line extraction and reconstruction postprocessing, and line level text recognition via a CRNN model.

The thesis's seven chapters are structured in a progressive manner. The introduction describes the motivation of this project. Next, there is a short summary about OCR, followed by a chapter providing an insightful picture behind the scenes of neural networks and a literature survey. Then, a new image text line extraction algorithm is presented as well as a particularization of a CNN-LSTM-CTC based line recognition model on the Romanian language, along with experimental details and results. The entire system has been showcased into a simple mobile application capable of taking pictures of documents and predicting whatever is written in there. The technical matters are covered in a separate chapter. Finally, some thoughts are expressed on possible refinement and further development of the presented approach.[**?**]