

CV 2010/2011

Note: This is a full MSc Thesis Proposal. This document should be used only as introduction and motivation for the topic. The specific work for the MAP-I CV course project will be discussed between the supervisor and the students.

Team size: 2 students.

Orientadores:

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Responsável pelo acompanhamento do trabalho na instituição:

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Título:

Optical Music Recognition in the grey-scale domain

Áreas envolvidas:

Processamento de Imagem e Visão por Computador

Local onde decorrerá o trabalho:

INESC Porto

Ramo:

Resumo:

Printed documents and handwritten manuscripts deteriorate over time, causing a significant amount of information to be permanently lost. Among such perishable documents, musical scores are especially problematic. Across the world, there are many dedicated national and international programs and projects which have been focused on the preservation of huge volumes of such documents. Digitization has been commonly used as a possible tool for preservation, offering easy duplications, distribution, and digital processing. However, to transform the paper-based music scores and manuscripts into a machine-readable symbolic format (facilitating operations such as search, retrieval and analysis), an Optical Music Recognition (OMR) system is needed.

Almost all existing systems start by preprocessing the music score image and by transforming the image into a binary image: this has the advantage of simplifying the image, thus facilitating the subsequent processing steps. However, in the binarization step, a lot of information is lost, which could be important to improve the quality of the processing.

Objectivos e resultados esperados:

Review and compare the state of the art techniques for the processing and analysis of music scores images. Research new methods for the staffline detection in music scores images by working directly in the grey-scale domain. Research new methods for the detection of music symbols in the grey-scale domain. Development of a workstation implementing the aforementioned algorithms.

Plano de trabalhos (incluindo plano de trabalho):

- 1) Acquisition the necessary knowledge to develop the research work, including graph concepts and dynamic programming;
- 2) Review of the state of the art in staff line and music symbol detection;
- 3) Critical comparison of the state of the art techniques for processing of music scores;
- 4) Proposal and implementation of new symbol detection algorithms for OMR in the grey-scale domain;
- 5) Integration of the developed algorithms in the GAMERA open source project;
- 6) Writing of the dissertation and of a scientific article;
- 7) Preparation of the thesis defence.

Aspectos inovadores:

Development of novel algorithms for optical music recognition.

Conferências científicas na área da dissertação:

CVPR – IEEE Computer Society Conference on Computer Vision and Pattern Recognition
ICPR – International Conference in Pattern Recognition
ICCV – IEEE International Conference on Computer Vision

Referências bibliográficas:

See publications in <http://www.inescporto.pt/~jsc/>.

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