Opportunity for a special project at ENSEA

Research Lab/Research group/Project supervisor: ☒ETIS ☐Quartz

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Project title:

Book cover material recognition using deep learning

Project's short description:

Ancient books being stored in public libraries pose a conservation problem as their covers deteriorate over time usually due to the acidity of the paper. Indexing the materials that compose a book and monitoring the deterioration over time is an essential task from the conservation point of view. Yet, this task is tedious and cannot be performed on a regular basis using human labour. In this project, we aim at performing the automatic recognition of material and defects using machine learning techniques and more specifically deep learning. In computer vision, this problem is known as semantic segmentation, where given an image, the algorithm has to label each pixel according to semantic classes (e.g., car, person, road, tree, etc.). This is achieved using deep convolutional neural networks trained on manually segmented images. In our case, the semantic classes follow a hierarchical structure (hierarchy or materials or hierarchy of defects) which we propose to take into account during the training procedure. Moreover, we face a scarcity of annotated data which we propose to overcome using adapted regularization techniques.

Area:

Deep Learning & Computer Vision

Keywords:

Deep Learning, Computer Vision, Image Processing

Prerequisite:

Basic Machine Learning, Neural Networks, Python Programming

Duration & Period of work: 3 Months & 0 Weeks; From 01/03/2019 to 31/07/2019

Applicant's minimal background: ☐Bachelor/Licence ☒Graduate/Master ☐PhD/Doctorate

Language proficiency required: ☒English ☐French ☐Other:

Additional information:

Special project in the ENSEA academic curriculum equivalent to 4 ECTS. Not paid, but please contact the International Relations Office at your home institution to see whether you may benefit from Erasmus+, national or academic grants.

Documents required for application: ☒CV ☒Cover letter ☒Transcript of Records

☐Other documents:

Contact for application:

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