PROPOSITION DE STAGE

Année 2016

Laboratoire L3i

Sujet de stage :

Multi-oriented text detection in natural scene images

Résumé du travail proposé :

Text appears everywhere in our natural surrounding environments such as in traffic signs, license plates, advertisement billboards, business cards, building signs and name plates. Text in such natural scenes carries important semantic information which is very useful in a variety of applications such as image/video search & retrieval, automatic driver assistance, robot navigation and human computer interaction.

Figure 1: text appearing in natural scenes

This master project focuses on automatic detection of scene text in multiple orientations using image processing and computer vision techniques. Once the text is detected and localized, it can be easily recognized or translated and used in interpreting the content of an image. This project deals only with the task of text detection and localization.

Mots clés :

Text in natural scenes – mobile captured images – text detection in scene images – visual feature extraction – character grouping

Informations complémentaires :

Encadrant(s) : Jean-Marc Ogier, Jean-Christophe Burie, Nibal Nayef

Thématiques :
- ☐ **Ingénierie des connaissances**
- **x Analyse et gestions de contenus**
- ☐**Interactivité et dynamique des systèmes**

Domaine d'application :
- **x Pertinence – contenu – interactions**
- ☐ **Environnement**

Cadre de coopération : Projet ANR AUDINM Franco-Chinois (Académie des Sciences de Pekin)

Date de début du stage: 4 janvier 2015

Durée du stage : 6 months

Financement : 450 Euros per month (for 6 months) + travel and living costs in China if the student wishes to benefit from this.

Contexte de l'étude:

The task of scene text detection is within the AUDINM project (Analysis and Understanding of Document Images in Network Media) [Analyse et Interprétation d'images de documents sur les réseaux sociaux]. AUDINM is funded by ANR. In this project, the laboratory L3i collaborates with the NLPR laboratory in Beijing – China.

The main goal is to analyze scenes images and born-digital images which can be found on the internet. This master project focuses on scene images, where detecting and understanding the text in those images helps us to search and retrieve those images.

This master project includes the opportunity to spend a fully funded 3-month research visit to NLPR lab in Beijing (3 months at L3i and 3 months at NLPR).

Description du sujet :

The main problem to be studied in this project is the automatic localization (detection) of scene text in uncontrolled environments. The main challenges in this problem are the complex background of natural scenes and the variability of scene text in terms of location, physical appearance and design (multiple fonts and orientations, and different text alignments).

The work plan for this master project includes the following main steps: study of state-of-the-art in scene text detection, finding candidate text characters in images, visual feature extraction, grouping and linking characters by clustering, text verification and extraction.

The master student will implément a system that takes an image as input, and outputs the location of the detected text inside the image. See Figure 2 as an example output of the system.

Figure 2: Detection of scene text (text marked in yellow bounding boxes)

Prérequis et contraintes particulières :

- Basic image processing knowledge (master courses)
- Good programming skills (python or C++ or matlab)
- Good English language skills (specially if you want to spend the research visit in China)

Références bibliographiques :

[1] Cong Yao; Xiang Bai; Wenyu Liu; Yi Ma; Zhuowen Tu, "Detecting texts of arbitrary orientations in natural images," in Computer Vision and Pattern Recognition (CVPR), pp.1083-1090, 2012.

[2] Lluis Gomez i Bigorda, Dimosthenis Karatzas, "Multi-script Text Extraction from Natural Scenes". ICDAR, pp. 467-471, 2013.

Contacts – liens :

Email :
jean-christophe.burie@univ-lr.fr
nibal.nayef@univ-lr.fr

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