PhD position (M/F) – Thesis offer (M/F)
(Reference: SN_JLD_PhD_imagerie_022017)

Research topics	**Second Generation of Tools in Image Forensics**
Department	Dept. of Digital Security
Parution date	February 16th, 2017
Start date	1st September 2017
Duration	Duration of the thesis
Description	This thesis is granted by a National French project.

Image forensics includes two major challenges:

- The detection of malicious manipulations;
- The identification of the sensors.

Even if image forensics is quite a new topic, some commercial products already exist. Nonetheless, several open problems still exist:

- The automation of analysis modules;
- The integration of such tools in standards, in particular of source coding; extension to video;
- The robustness of such tools against advanced attackers, themselves experts in image forensics (i.e. counter-forensics).

In this work, the Ph.D student will mainly focus on the automatic detection of image manipulations, according to the following three axes:

- **Automation**

Currently, tools in image forensics require some manual steps that can be done by trained photo-experts. Automation of such tasks would save time, reduce costs attached to training and facilitate the spread of such tools to larger audiences with some new potential domains of application (e.g. social networks).

- **Robustness**

Currently, tools work under the assumption that image manipulations are performed to fool human perception, with no assumption on the possible existence of digital detectors. In the close future, one can imagine that attacks will be improved so that they are undetectable by both humans and machines.

We may distinguish between different levels of manipulations:

1. Basic and global processing like source coding or zoom;
2. Advanced and local processing like cut & paste operations, inpainting.

- **Video**

The current tools are dealing with still images. Nevertheless, videos are more and more important. Extension of algorithms from images to videos is then a priority.

Prospective applicants are encouraged to read the following reference for more information about the exact topic : ***Digital image forensics: a booklet for beginners***

JA Redi, W Taktak, J.-L. Dugelay

J. Multimedia Tools and Applications 51 (1), 133-162

Requirements   Education Level / Degree: Computer Engineering or Master Degree (with honors); English is mandatory, French is just a plus.

Application   The application must include:

- I-Curriculum Vitae

- III-Names and contacts of two references

Applications should be submitted by e-mail to secretariat@eurecom.fr with the reference: SN_JLD_PhD_imagerie_022017

Postal address   CS 50193 - 06904 Sophia Antipolis, France

Contact   secretariat@eurecom.fr

Fax number   +33 4 93 00 82 00

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