**Title of the doctoral program**  
Electrical, Electronics and Communications engineering

**Title of the research activity**  
Image and video retrieval based on camera identification

**Short description of the research activity**  
Camera identification is a technology allowing to link a photo or a video to the device that has shot it. Specifically, any digital imaging sensor leaves its own unique fingerprint in all pictures or video frames, and the fingerprint can be detected and compared with a database of known fingerprints. Recent advances in fingerprint compression have made possible low-complexity camera identification on very large scales. This enables several interesting applications, like retrieving all pictures shot by a given camera on social media sites like Facebook or Flickr, or clustering pictures according to the device that shot them. However, the practical deployment of this technology still requires the solution of several problems, including efficient search and clustering algorithms, robustness of compressed fingerprints to image crop and resizing, extension of the above techniques to videos. This PhD project aims at solving the above problems, by developing innovative solutions that fully exploit the potentialities of camera identification.

**References**


**Deadline to start the research activity**

**Scientific responsible (name, surname, role)**

Prof. Enrico Magli (DET) ([enrico.magli@polito.it](mailto:enrico.magli@polito.it))

Prof. Tiziano Bianchi (DET) ([tiziano.bianchi@polito.it](mailto:tiziano.bianchi@polito.it))

**Number of vacancies for XXXII cycle (3 years program)**

1

**Specific requirements (experiences, skills)**

Background on signal processing. Image processing and databases are a plus, but not a requirement.

**Website of the research group (if any)**

[staff.polito.it/enrico.magli](http://staff.polito.it/enrico.magli)

[www.crisp-erc.eu](http://www.crisp-erc.eu)