



## TECHNOLOGY

# A Counterfeit Detection Scheme using Paper Surfaces and Mobile Cameras

## OVERVIEW

### Background

Counterfeiting is a world-wide problem affecting high value documents, high end consumer product labels, and other assets. Traditional anti-counterfeiting mechanisms heavily rely on visual examination of the document or product label and decision of a particular examiner. Recent technological solutions include optically capturing the microscopic roughness of the paper surface by consumer-level scanners and industrial cameras, both under controlled lighting conditions in the form of image appearance rendered according to the physical law of light reflection at the paper surface. The appearance images, and the subsequent normal vector field of the surface estimated from the appearance images, can achieve satisfactory authentication results. However, if the ambient lighting is not well controlled, the image appearance alone has not achieved satisfactory authentication results.

### Innovative Technology

Researchers at the University of Maryland have developed a method for the counterfeit detection of documents and expensive consumer goods that can be deployed on a mobile platform using smartphones or tablets and without the need for controlled lighting. This invention employs mobile cameras with the camera's built-in flash and exploit the intrinsic microscopic roughness of the paper surface for counterfeit detection. The authentication process is automated by using an algorithm implemented in computer program to extract the physical unclonable features of the paper surface and to authenticate the paper by comparing to the previously enrolled features of a particular document or product label. This mobile platform solution offers a flexible and accessible way of authentication for end users.

## APPLICATIONS

- High end wine labels
- High end consumer products
- Pharmaceutical labels
- High value paper documents

## ADVANTAGES

- Can use mobile phone or tablet camera
- Does not require controlled lighting

## STAGE OF DEVELOPMENT

Prototype

## CONTACT INFO

UM Ventures  
0134 Lee Building  
7809 Regents Drive  
College Park, MD 20742  
Email: [umdtechtransfer@umd.edu](mailto:umdtechtransfer@umd.edu)  
Phone: (301) 405-3947 | Fax: (301) 314-9502

## **Additional Information**

### **INSTITUTION**

University of Maryland, College Park

### **PATENT STATUS**

Pending

### **EXTERNAL RESOURCES**

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