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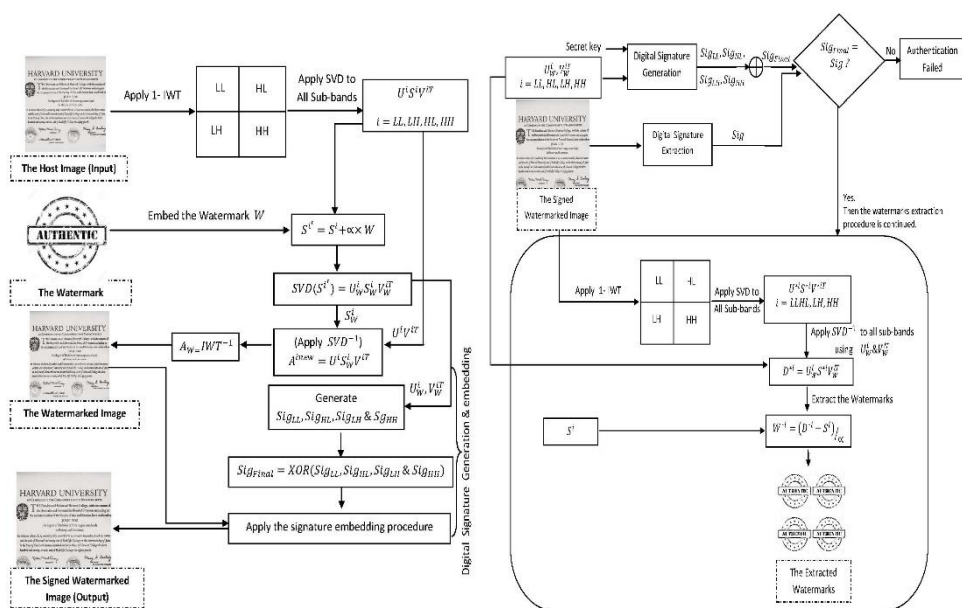
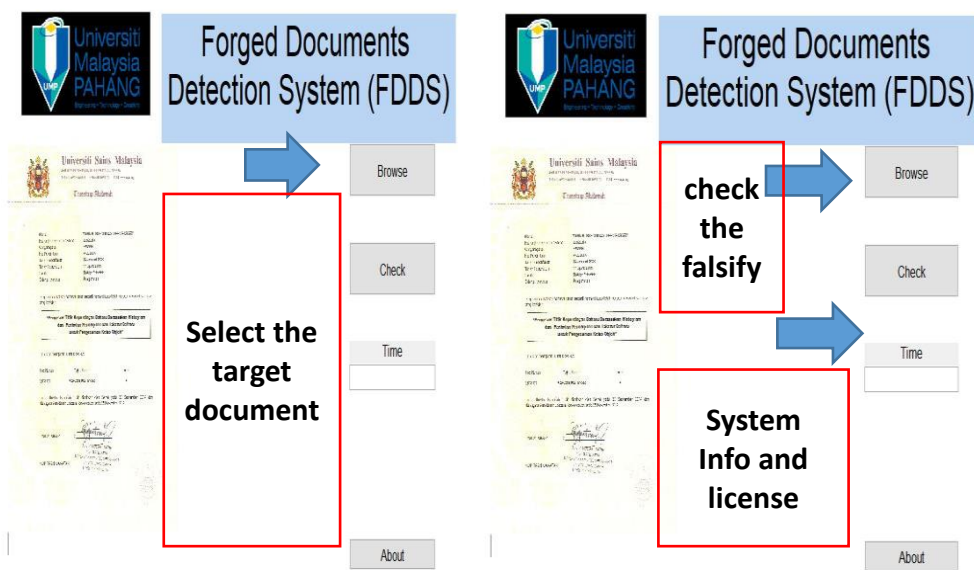


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## PRODUCT BACKGROUND

- Image processing tools have been associated with a variety of crimes, including counterfeiting of **currency notes, cheques**, as well as manipulation of important government documents, wills, financial deeds or **educational certificates**.
- It is important for the **Document Examiner** to keep up to date with latest technological and scientific advances in the field.
- Several approaches may be used to falsify a document. For example, documents may be **copied using copying machines, remade using word processing software or scanned, digitally modified and finally printed**.

## PRODUCT OVERVIEW

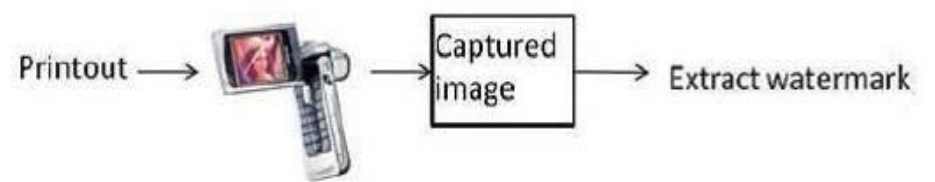
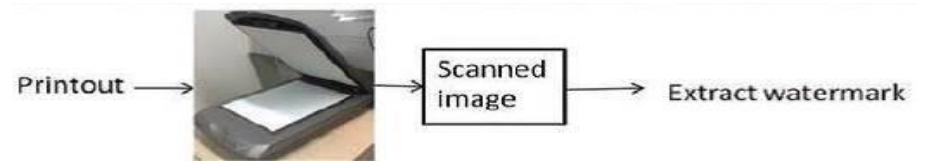
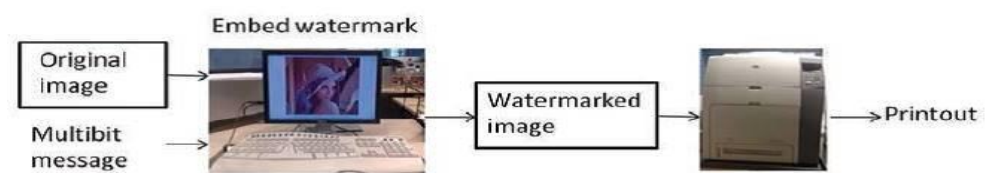


## COMMERCIALIZATION

- Check if a certain item (image, video, audio, etc.) on the net is copyrighted? **Expensive software's**.
  - To avoid the illegal internet distribution? **Expensive software's**.
  - Spot fraudulent education documents and fake degrees. **Expensive software or special expensive ships**.
  - Track the illegal copy items. **Expensive software's**
- Examples : 1) Image Forgery Detector price/documents (5 USD for 5 documents).

## NOVELTY & INVENTIVENESS

- A robust image watermarking scheme **against image processing and geometrical attacks**.
- A **secure image watermarking** scheme, so can be used for **copyright protection** (No false positive problem).
- A resistant image watermarking scheme against **print- scan and print-cam challenges**.



## MARKETABILITY

**Anti-Forgery Documents Detection System (FDDS)** for detecting documents (Educational Certificates, bank documents, etc.) forged by printing and copying

## PATENT/COPYRIGHT

- Registration/Patent No: **LY2017001243** – A secure DWT-SVD Block-based Image Watermarking Scheme.
- Registration/Patent No: **LY2018001782** – A Forged Documents Detection System (FDDS).

## PUBLICATIONS

1. **Taha H. Rassem, Bee Ee Khoo and N. M. Makbol**, "A new reliable optimized image watermarking scheme based on the integer wavelet transform and singular value decomposition for copyright protection", information sciences, **2017, IF = 4.832, Q1**.
2. **Taha H. Rassem, Makbol, N. M., & Khoo, B. E.**, 'Security Analyses of Hybrid Digital Image Watermarking Techniques Based On SVD in Wavelet Transform Domain'- Multimedia Tools and Applications, **2018, IF = 1.530, Q2**.
3. **Taha. H. Rassem, N. M. Makbol and Bee Eee Khoo** and "Block-based discrete wavelet transform singular value decomposition image watermarking scheme using human visual system characteristics," in IET Image Processing, **2016, IF = 1.044, Q2**.
4. **Taha H. Rassem, Bee Ee Khoo and Nasrin M. Makbol**, "Performance evaluation of SVD-based digital image watermarking scheme on print-scan and print-cam (PSPC) applications," 2014 International Symposium on Intelligent Signal Processing and Communication Systems (ISPACS), 2014. **IEEE**.

## COLLABORATORS



## ACHIEVEMENTS



**GOLD MEDAL, CREATION, INNOVATION, TECHNOLOGY & RESEARCH EXPOSITION, CITReX 2018, UMP.**

## FUNDS

A new Secure Hybrid SVD-Based Image Watermarking Scheme for Copyright Protection, UMP RDU, **RM 20K**, (Oct 2015- March 2018).