Privacy-preserving Image Processing in the Cloud

ABSTRACT

Millions of private images are generated in various digital devices every day. The consequent massive computational workload makes people turn to cloud computing platforms for their economical computation resources. Meanwhile, the privacy concerns over the sensitive information contained in outsourced image data arise in public. In fact, once uploaded to cloud, the security and privacy of the image content can only presume upon the reliability of the cloud service providers. Lack of assuring security and privacy guarantees becomes the main barrier to further deployment of cloud based image processing systems. This paper studies the design targets and technical challenges lie in constructing cloud-based privacy-preserving image processing system. We explore various image processing tasks, including image feature detection, digital watermarking, content-based image search etc. The state-of-the-art techniques, including secure multiparty computation, and homomorphic encryption are investigated. A detailed taxonomy of the problem statement and the corresponding solutions is provided.

EXISTING SYSTEM

- The general fully homomorphic encryption schemes to image processing applications would be far from practical, due to their huge computation complexity.
- Different from FHE, SHE schemes can only support limited times of homomorphic operations.
- The SHE schemes are usually utilized in both secure image feature detection and secure image retrieval matching mechanisms.
- In existing works, the cloud is usually utilized to perform tasks like watermark generation, detection, and matching.

PROPOSED SYSTEM

- SMC techniques lies in secure image watermark detection algorithms. A digital watermark is a signal permanently embedded in digital data, i.e., audio, pictures, or video.
- Though utilizing SMC techniques can effectively reduce computational complexity compared with using HE techniques.
- the inherent feature of SMC techniques requires that the data owner must be online when the cloud performs most operations. Hence, it only applies to limited types of applications in practice.

SYSTEM REQUIREMENTS

HARDWARE REQUIREMENTS:

- Processor - intel core i3
- RAM - 2GB
- Hard Disk - 20 GB

SOFTWARE REQUIREMENTS:

- Tool - MATLAB R2016
- Operating system - Windows 7,8

REFERENCE

1. M. Armbrust et al., “A view of cloud computing,” *Communications of the ACM, vol.* 53, no. 4, 2010, pp. 50–58.

2. H. Esfahani et al., “Cloudbuild: Microsoft's Distributed and Caching Build Service,” *Software Engineering in Practice (SEIP 16), 2016.*

3. C. Wang et al., “Privacy-assured outsourcing of image reconstruction service in cloud,” *IEEE Transactions on Emerging Topics in Computing, vol. 1, no. 1, 2013, pp.* 166–177.

4. C. Modi et al., “A survey of intrusion detection techniques in cloud,” *Journal of Network and Computer Applications, vol. 36, no. 1, 2013, pp. 42–57.*

5. W. Lu et al., “Secure image retrieval through feature protection,” *Procedings of the International Conference on Acoustics, Speech, and Signal Processing (ICASSP 09),* 2009.