Towards Privacy-preserving Content-based Image Retrieval in Cloud Computing

Abstract—Content-based image retrieval (CBIR) applications have been rapidly developed along with the increase in the quantity, availability and importance of images in our daily life. However, the wide deployment of CBIR scheme has been limited by its the severe computation and storage requirement. In this paper, we propose a privacy-preserving content-based image retrieval scheme, which allows the data owner to outsource the image database and CBIR service to the cloud, without revealing the actual content of the database to the cloud server. Local features are utilized to represent the images, and earth mover’s distance (EMD) is employed to evaluate the similarity of images. The EMD computation is essentially a linear programming (LP) problem. The proposed scheme transforms the EMD problem in such a way that the cloud server can solve it without learning the sensitive information. In addition, local sensitive hash (LSH) is utilized to improve the search efficiency. The security analysis and experiments show the security and efficiency of the proposed scheme.

Conclusion

In this paper, we propose a privacy-preserving content-based image retrieval scheme, which allows the data owner to outsource image database and the CBIR service to the cloud without revealing the actual content of the database. Local features are utilized to represent the images, and earth mover’s distance (EMD) is employed to evaluate the similarity of images. We transform the EMD problem so that the cloud server can solve the problem without learning the sensitive information. In order to improve the search efficiency, we design a two-stage structure with LSH. In the first stage, dissimilar images are filtered out by pre-filter tables to shrink the search scope. In the second stage, the remaining images are
compared under EMD metric one by one for refined search results. The security analysis and experiments show the security and efficiency of the proposed scheme.

SYSTEM REQUIREMENTS:

HARDWARE REQUIREMENTS:

- System : Pentium IV 2.4 GHz.
- Hard Disk : 40 GB.
- Floppy Drive : 1.44 Mb.
- Monitor : 15 VGA Colour.
- Mouse : Logitech.
- Ram : 512 Mb.

SOFTWARE REQUIREMENTS:

- Operating system : Windows XP/7.
- Coding Language : JAVA/J2EE
- Data Base : MYSQL

REFERENCES

