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EE-381K (Multidimensional Signal Processing)
Fall 1998

Project Idea: Digital Image Watermarking

Digital network performance has steadily increased over the past years, and as a result, multimedia data such as images have become more readily available and easier to distribute. However, many authors are reluctant to release images over the Internet, because digital pictures can be easily duplicated and distributed without the owner's consent. Digital watermarks have been proposed as a way to discourage possible copyright infringements by placing an invisible signature on the image.

For this project, I will create a new watermarking scheme and see how effective it is according to the following criteria:

1) Invisibility, so the watermark will not distort the image and cannot be easily erased

2) Simple extraction and detection, to quickly determine a watermark's presence

3) Robust to tampering, such as compression, cropping, and noise addition

4) Plentiful, so many different watermarks can be generated

5) Reliable, with few false detections or false non-detections

Implementation of the watermark will be performed using MATLAB.

References:

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[2] I. Cox, J. Kilian, F. Leighton, T. Shamoon, "Secure Spread Spectrum Watermarking for Multimedia," *IEEE Transactions on Image Processing*, vol.6, pp. 1673-1686, Dec. 1997.

[3] R. Schyndel, A. Tirkel, and C. Osborne, "A Digital Watermark," *Proc. IEEE International Conference on Image Processing*, vol. 2, pp.86-90, Nov. 1994.

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[4] M. Swanson, B. Zhu, A. Tewfik, "Transparent Robust Image Watermarking," *Proc. IEEE International Conference on Image Processing*, vol. 3, pp. 211-218, Sept. 1996.

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