LABORATORY FOR COMPUTER SCIENCE — MASSACHUSETTS INSTITUTE OF TECHNOLOGY

APPLIED SECURITY READING GROUP

Defeating Statistical Steganalysis

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10:30-11:30AM NE43-941

Niels Provos will discuss how to defeat statistical steganalysis. He is an OpenSSH developer and graduate student from the Center for Information Technology Integration at the University of Michigan.

Abstract:

The main purpose of steganography is to hide the occurrence of communication. While most methods in use today are invisible to the observer's senses, mathematical analysis may reveal statistical discrepancies in the stego medium. These discrepancies expose the fact that hidden communication is happening.

This talk presents a new method to preserve the statistical properties of the cover medium. After applying a correcting transform to an image, statistical steganalysis is no longer able to detect the presence of steganography. We present an a priori estimate to determine the amount of data that can be hidden in the image while still being able to maintain frequency count based statistics. This way, we can quickly choose an image in which a given message can be hidden safely. To evaluate the effectiveness of our approach, we present statistical tests for the JPEG image format and explain how our new method defeats them.

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