ETH
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Watermarking of Screens for Data Leakage Investigations

1 Background

Leakage of confidential information is one of the major IT threats for companies. Leakage can either occur (1) unintentionally through careless employees, through (2) external attackers using malware or through (3) malicious employees (insiders). In this thesis, the focus is set on intentional data leakage through insiders.

Companies employ various methods to prevent leakage of proprietary information. Data leakage prevention systems (DLPs) monitor data leaving the company network, block and report data that matches pre-configured rules. Further, taking screenshots is disabled, USB ports on workstations are locked such that employees can not leak data using USB keys and printers can be monitored to prevent printing confidential information.

However, these measures can not prevent employees from taking pictures of their workstation's screen with a camera. In fact, this is a frequently occurring data leakage scenario.

The goal of this thesis is to attribute pictures of confidential information to the malicious employee taking them. A novel method should be proposed, analyzed and evaluated in realistic scenarios.

2 Thesis Goals

The goals of this master thesis are to:

- Survey the literature on watermarking techniques.
- Propose and analyze different watermarking approaches that are suitable for information displayed on the screen.
- Implement a promising approach.
- Evaluate how much information can be embedded for different applications using watermarking without disturbing the user / the user noticing it.
- Use a high-end eye tracker system the evaluate how well visible the watermarks are for real users.
- Summarize your findings in a report.

3 More Information

To get more information about this thesis, please contact David Gugelmann (gugelmann@tik.ee.ethz.ch) or Vincent Lenders (vincent.lenders@armasuisse.ch).