WE JUST CORRELATE

Timing Side-Channel Attack

Using linear correlation to reveal secrets

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RSA

Outline

Introduction

- in several algorithms used for security purposes some optimizations are introduced
- these optimizations lead to a linear dependency between time and the data encrypted
- knowing information regarding the time-data pair, it is possible to find a correlation
- this correlation can be used to unveal part of the secret

Hypothesis

Tools needed

In order to successfully extract the secret through the correlation, we have to make a list of assumptions:

- timing for a sufficiently large number of cyphertexts is known
- cyphertexts are known
- secret is the same for all cyphertexts
- the HW/SW implementation is known to the attacker
- a timing model can be built

Titlepage settings

- by changing settings in

  `header_footer.sty`

  you can choose whether and where you want a second logo to be positioned on the titlepage:
  - small logo can be placed on the bottom right
  - big logo can be placed on the top right
- spaces and graphics dimensions will have to be adjusted depending on your logo

Outline

- divide the presentation, using the command `section` (as it is usually done in LaTeX)
- other divisions, just as chapter or part are not supported
- the sections are are listed on the top of each slide, the section the recent slide belongs to is highlighted
- you can automatically receive an outline out of this section by the command

  `\tableofcontents`

Itemize

- black circle is the default; other possibilities are:
  - ball
    - triangle
- the color of the items can also be changed
- all this settings have to be done in the preamble of the `presentation.tex` file

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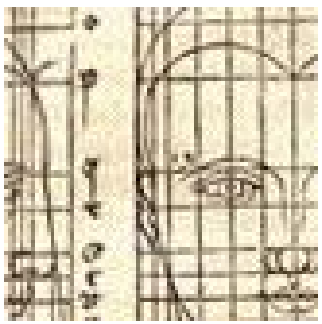
$$f(x \mid \mu, \sigma^2) = \frac{1}{\sigma\sqrt{2\pi}} \cdot \exp\left\{ -\frac{(x-\mu)^2}{2\sigma^2} \right\}$$

Pimp up your presentation

- an easy way to include pictures is by using

  `\includegraphics[width=...,height=...]{file}`
- in connection with `pdflatex` this supports a wider range of graphic formats, including GIF, PNG, JPG



Useful hints

- if you use a verbatim environment on a slide, declare that slide `fragile`:

  `\begin{frame}[fragile]`
- bibliography actually works as usual, just keep in mind that not all bibliography styles are supported by the *beamer* package, maybe you have to include some other packages to get your preferred style working

Possible solution

Blinding

Test

linding the messages before encryption.

References

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