Real-Time Client-Side Phishing Prevention Add-on

Giovanni Armano, Samuel Marchal, Kalle Saari, Nidhi Singh, N. Asokan

Aalto University

Collaborative Research Institute for Secure Computing

Academy of Finland
Research funding and expertise

Phishing is a major problem, which has no definitive solution.

Efficient detection techniques and relevant warnings are needed to steer users away from phishing websites.

https://ssg.aalto.fi/projects/phishing/

Drawbacks of current detection techniques

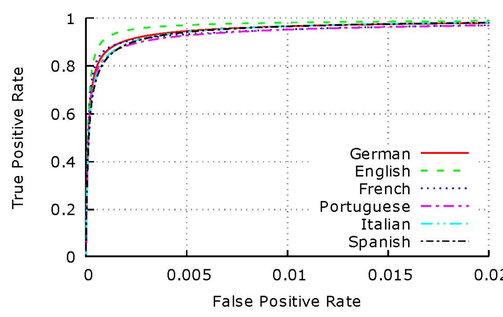
- Server-based solutions raise privacy concerns
- Offline analysis induce delay in detection
- Warning but no guidance for users
- Bag-of-words model implies language dependency
- Thwarted by dynamic content

Our solution

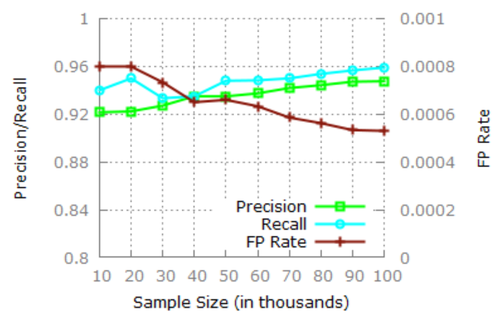
- Features modelling phishers' limitations
- Term usage consistency in constrained part
- Client-side-only computation
- Infer potential targets of the phish and propose redirection to the legitimate ones

Highlights of our solution

- Language and brand independent
- Resilient to adaptive attacks
- Ensure user's privacy
- Generalizable detection model
- Effective target detection



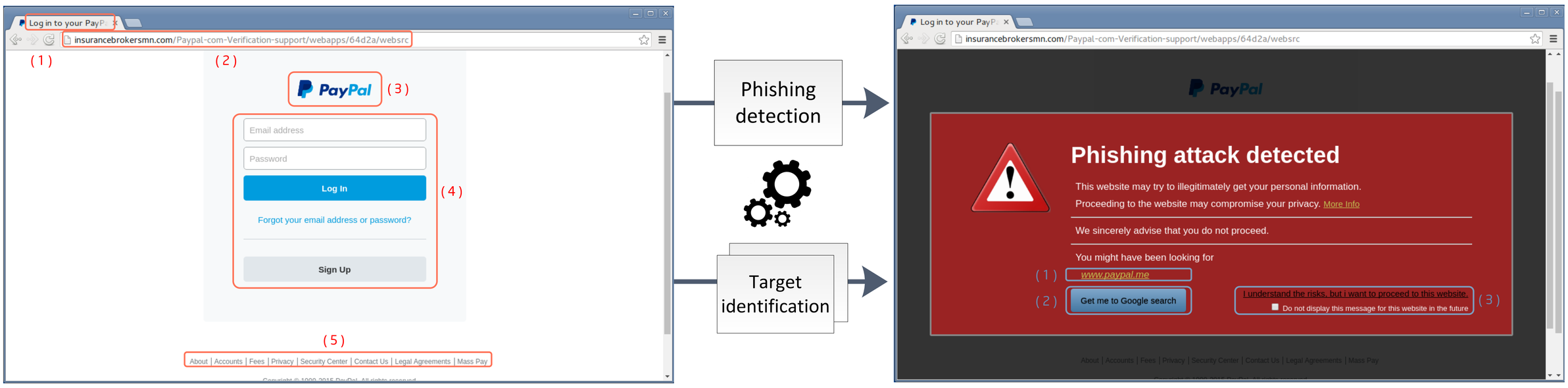
ROC evaluation results for six languages



Performance vs the scale of data

Performance

- High accuracy: 99 %
- Low FPR: 0.1 %
- Fast warning: 473 ms median time



(1) Title
(2) Start / Land URL
(3) Logged links
(4) Text
(5) HREF Links

Phishing evaluation

(1) Redirection to legitimate website
(2) Redirection to Google search
(3) Proceed on the website