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I can’t recognize (yet): Delayed Rendering to Defeat Visual Phishing Detectors

Ying Yuan, Cristiano Alex Rado, Giovanni Apruzzese, Mauro Conti, Luigi Vincenzo Mancini



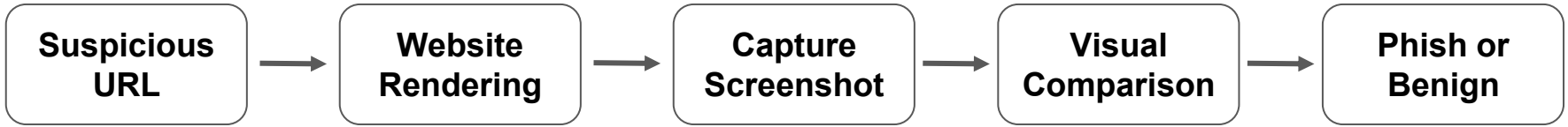




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Visual Phishing Detectors

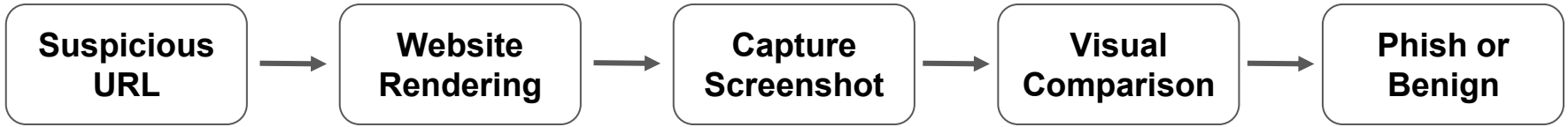
Visual phishing detectors identify phishing websites based on the visual similarity of website screenshots or logos [1,2].



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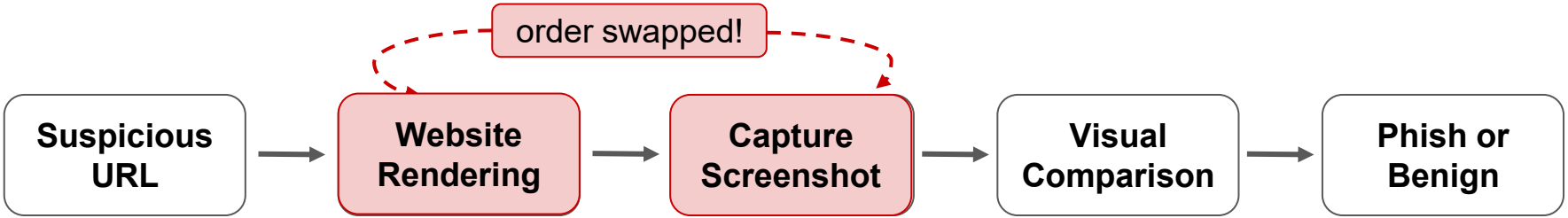


works well…**if the page is displayed before screenshot capture**

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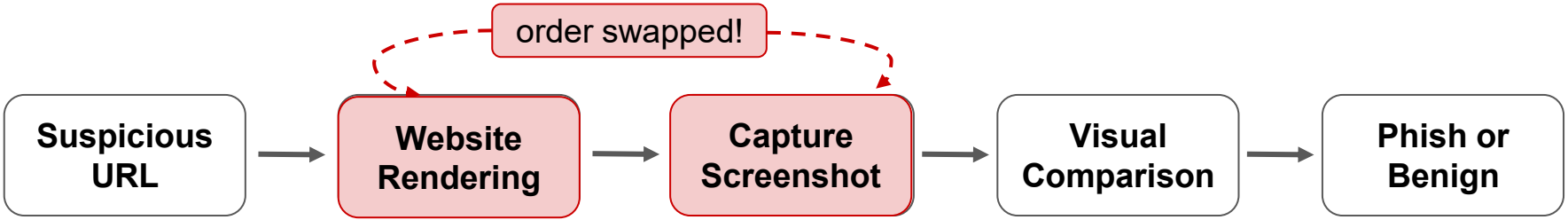


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Delayed-rendering attack: screenshot is captured before page fully displayed

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[2] Visualphishnet: Zero-day phishing website detection by visual similarity. In CCS 2020.

Delayed-rendering: Timing Attacks

Observed in the wild, but not systematically studied [3,4].



[3] Crawlphish: Large-scale analysis of client-side cloaking techniques in phishing. In IEEE S&P 2021.
[4] “Real Attackers Don’t Compute Gradients”: Bridging the Gap Between Adversarial ML Research and Practice. In SaTML 2023.

Summary

Delayed-rendering attacks
- **60** attack variants, **4** SOTA visual detectors
- detection rate: **100%->0%**

User Perception
- realistic & worst-case scenarios, n=**247**
- unable to identify perturbations

Countermeasure
- browser extension

Thanks!

paper

attack

Join us at poster session.

https://github.com/joanyy/eurosp26_delayphish

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