AuntieTuna

Personalized Content-based Phishing Detection

Calvin Ardi, John Heidemann
Welcome to Internet Banking

If you don't already use Internet Banking, it's simple to register online.

Please enter your password and User ID (if you have forgotten your User ID simply click on the link 'Forgotten your User ID' and follow the instructions).

- **User ID:**
  - Please enter a value.

- **Password:**

- **Remember my User ID** [ ]

**Warning:** Don't tick this box if you're using a public or shared computer

- Forgotten your password?
- Forgotten your User ID?
- Having problems logging in?

Continue

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HELPFUL

- Can I get a Mortgage moving by booking an appointment online with your local advisor?

Book now

YOUR HOME MAY BE REPOSSESSED IF YOU DO NOT KEEP UP REPAYMENTS ON YOUR MORTGAGE.

Contact Us....

Help & Support

PAYMENTS

- Send money abroad, simply with Online International Payments.

Find out more

Protecting your money find out more here
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You're logging into a secure site
How can I tell that this site is secure?

Your home may be repossessed if you do not keep up repayments on your mortgage.

Contact Us....

Help & Support
sawyed-alakwan.com/wp-content/3618349200/lloyd
lost time and $$$
we need something effective and usable
url blacklists

effective?

usable?
effective?  
usable?  
url blacklists  
slow updates
url blacklists

effective?  ♣️
slow updates

usable?  🚧
when updated
effective? 🐌

usable? 🚧

url whitelists ✅
url whitelists

effective? yes

usable?
url whitelists

effective? yes
usable? too restrictive
what targets do we track?
what targets do we track?
how to deal with our targets?
what targets do we track?
how to deal with our targets?
how to make it usable?
Auntie Tuna

user personalization
precise content matching
usable design
user personalization
precise content matching
usable design
AuntieTuna

user personalization (discovery)
precise content matching
usable design
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1. Forgotten your password?
2. Forgotten your User ID?
3. Having problems logging in?

UPDATE BROWSER
To remain safer online and for a better online experience, check that you're using the latest browser. Find out more.
trust on first use
add to good list

messages

all systems go.

manual add
⇒ defense++
Auntie Tuna

user personalization (discovery)
precise content matching (detection)
usable design
Lorem ipsum dolor sit amet, consectetur adipiscing elit.
Lorem ipsum dolor sit amet, consectetur adipiscing elit.

581d51aba4e
dolor sit amet,
consectetur
adipiscing
elit.

<script>
window.alert("hello world")
</script>
common elements

⇒ phish
effective?
do we find the phish?
TABLE I. **Classification of phish in two days of PhishTank reports, based on detection against PayPal. Sensitivity = 58.8%, Specificity = 100%**.

<table>
<thead>
<tr>
<th>Description</th>
<th>Num. Pages</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Candidates</td>
<td>2374</td>
<td></td>
</tr>
<tr>
<td>Unavailable</td>
<td>486</td>
<td></td>
</tr>
<tr>
<td>Ripped</td>
<td>1888</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>1764</td>
<td>TN = 1764</td>
</tr>
<tr>
<td>PayPal (image-based, <em>removed</em>)</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>PayPal</td>
<td>85</td>
<td>100.0</td>
</tr>
<tr>
<td>Successfully detected</td>
<td>50</td>
<td>58.8</td>
</tr>
<tr>
<td>Direct rips</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Whitespace norm.</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>JavaScript obfuscation</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Custom-styled with minor PayPal content</td>
<td>35</td>
<td>41.2</td>
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<td>FN = 35</td>
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</table>

pretty good! (58.8%)
usable?
## TABLE II. PAGE RENDER AND AUNTIE TUNA EXECUTION TIMES

<table>
<thead>
<tr>
<th>Website</th>
<th>Page Render</th>
<th>Auntie Tuna</th>
</tr>
</thead>
<tbody>
<tr>
<td>google.com</td>
<td>327 (15)</td>
<td>144 (6)</td>
</tr>
<tr>
<td>paypal.com</td>
<td>349 (5)</td>
<td>20 (2)</td>
</tr>
<tr>
<td>nytimes.com</td>
<td>5316 (1632)</td>
<td>167 (6)</td>
</tr>
<tr>
<td>en.wikipedia.org</td>
<td>321 (7)</td>
<td>75 (3)</td>
</tr>
</tbody>
</table>
post-render

en.wikipedia.org

Auntie Tuna

321 75
en.wikipedia.org

AuntieTuna
AuntieTuna

user personalization (discovery)

precise content matching (detection)

usable design
one button

add to good list

messages

all systems go.
Warning—Suspected phishing page!

This page may be a forgery designed to trick you into sharing sensitive information. Entering any information here may result in identity theft or other abuse.

→ What is phishing and how do I protect myself? Click to learn more: antiphishing.org

→ We think you meant to go to: PayPal (paypal.com)

Back to Safety
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escape #1
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Back to Safety

Advanced
challenges
extensions = effort
this works
stopped class of attacks
AuntieTuna

effective and usable
use it, hack it

https://ant.isi.edu/software/antiphish