

# Resurrecting Duckling

#### Imprinting on Mother:

Device shares key on 1st contact with controller

#### Metempsychosis:

Upon death, soul progresses to a new body

### Reverse metempsychosis:

Upon death, new soul can enter the body

#### Resistance to assassination:

Only mother can kill her ducklings

#### Escrowed seppuku:

Manufacturer can kill too

# Cashier-as-a-Service (CAAS)

#### Ecommerce workflow:

- 1. Shopper surfs Merchant's site
- 2. Shopper sends over .../place\_order.html
- 3. Merchant sends back redir. to CAAS.com
- 4. Shopper interacts with CAAS
- 5. CAAS interacts with Merchant
- 6. CAAS redirects shopper back to Merchant

S→M: place\_order.html
[M inserts ID and price into database; status=PENDING]

 $M \rightarrow S \rightarrow C$ : get\_payment?orderID=X&price $\neq Y$  [C records payment info, generates transaction # T]

 $C \rightarrow S \rightarrow M$ : finish?transID=T[M contacts C for identifer X associated w/T]
[M retrieves orderID=X from database;
if order status =  $PENDING \rightarrow mark$  as PAID; ship X]

S→M: place\_order.html
[M inserts ID and price into database; status=PENDING]

 $M \rightarrow S \rightarrow C$ : get\_payment?SIGN<sub>M</sub>(ID=X, price=Y) [C verifies signature; records payment info, generates # T]

 $C \rightarrow S \rightarrow M$ : finish?SIGN<sub>C</sub>(ID=X,price=Y,PAID)

[M verifies signature and PAID is indicated]

[M retrieves orderID=X from database;

if order status = PENDING  $\rightarrow$  mark as PAID; ship X]

S→M: place\_order.html
[M inserts ID and price into database; status=PENDING]

 $M \rightarrow S \rightarrow C$ : get\_payment?SIGN(ID=X, price=Y) [C verifies signature; records payment info, generates # T]

 $C \rightarrow S \rightarrow M$ : finish?SIGN<sub>C</sub>(ID=X,price=Y,PAID)

[M verifies signature and PAID is indicated]

[M retrieves orderID=X from database;

if order status = PENDING  $\rightarrow$  mark as PAID; ship X]

# Fix for CAAS Attack #2

```
S→M: place_order.html
[M inserts ID and price into database; status=PENDING]
```

```
M \rightarrow S \rightarrow C: get_payment?

SIGN_M(ID=X,price=Y,merch=M)

[C verifies signature; records payment info, generates # T]
```

```
C\rightarrowS\rightarrowM: finish?

SIGN<sub>C</sub>(ID=X, price=Y, merch=M, PAID)

[M verifies signature and PAID is indicated, etc.]

[M retrieves orderID=X from database;

if order status = PENDING \rightarrow mark as PAID; ship X]
```

# Better Fix for CAAS Attack #2

```
S→M: place_order.html
[M inserts ID and price into database; status=PENDING]
```

```
M \rightarrow S \rightarrow C: get_payment?

SIGN_M(ID=X,price=Y,merch=M,shop=S)

[C verifies signature; records payment info, generates # T]
```

```
C \rightarrow S \rightarrow M: finish?

SIGN_C(ID=X,price=Y,merch=M,shop=S,PAID)

[M \ verifies \ signature \ and \ PAID \ is \ indicated, etc.]

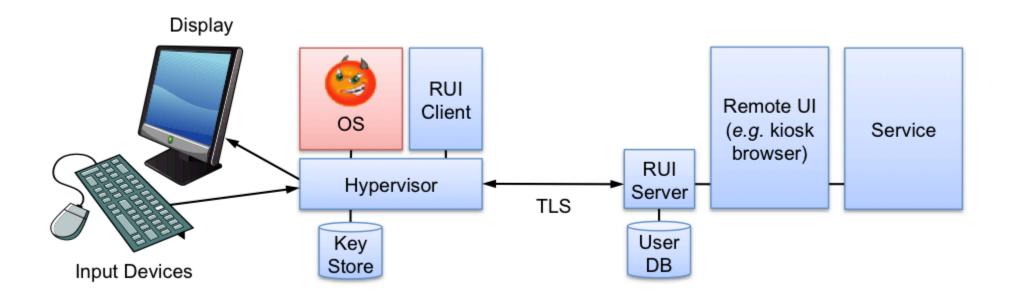
[M \ retrieves \ orderID=X \ from \ database;

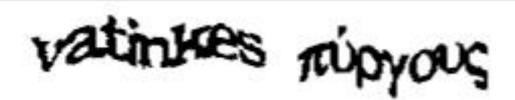
if \ order \ status = PENDING \rightarrow mark \ as \ PAID; \ ship \ X]
```

```
S \rightarrow M: checkout?ID = X_I \& price = Y_I
[M sets session\_status[S] \leftarrow confirm\_with\_C(..., X_I, Y_I) \leftarrow FAILED]
M \rightarrow S: update_status?SIGN_M(ID = X_I)
```

```
S\rightarrowM: checkout?ID=X_1&price=Y_1
[M sets session\_status[S] \leftarrow
confirm\_with\_C(..., X_1, Y_1) \leftarrow FAILED]
M\rightarrowS: update\_status?SIGN_M(ID=X_1)
S\rightarrowM: checkout?ID=X_2&price=Y_2 Y_2 \ll Y_1
[M sets session\_status[S] \leftarrow
confirm with C(..., X_2, Y_2) \leftarrow CONFIRMED]
```

```
S \rightarrow M: checkout?ID=X_1&price=Y_1
 [M sets session status[S] \leftarrow
      confirm with C(..., X_1, Y_1) \leftarrow FAILED
M \rightarrow S: update status?SIGN<sub>M</sub>(ID=X_I)
S\rightarrowM: checkout?ID=X_2&price=Y_2 Y_2 \ll Y_1
 [M sets session status [S] \leftarrow
      confirm with C(..., X_2, Y_2) \leftarrow CONFIRMED
S \rightarrow M: update status?SIGN<sub>M</sub>(ID=X_I)
[M validates signature;
 if session status [S] = CONFIRMED \rightarrow
       session status [S] = PAID; ship X_1
```









stop spam. read books.

# Verify Your Registration \* Enter the code shown: This helps prevent automated registrations.

#### Please enter the code you see below. what's this?

#### Qualifying question

Just to prove you are a human, please answer the following math challenge.

Q: Calculate:

$$\frac{\partial}{\partial x} \left[ 4 \cdot \sin \left( 7 \cdot x - \frac{\pi}{2} \right) \right] \Big|_{x=0}$$

A: | mandatory

Note: If you do not know the answer to this question, reload the page and you'll get another question.

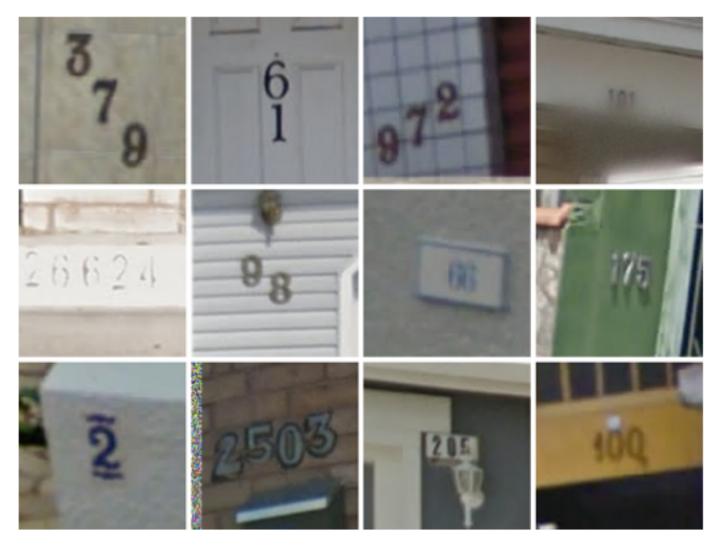


Figure 2: Difficult but correctly transcribed examples from the internal street numbers dataset.



Figure 3: Examples of incorrectly transcribed street numbers from the large internal dataset

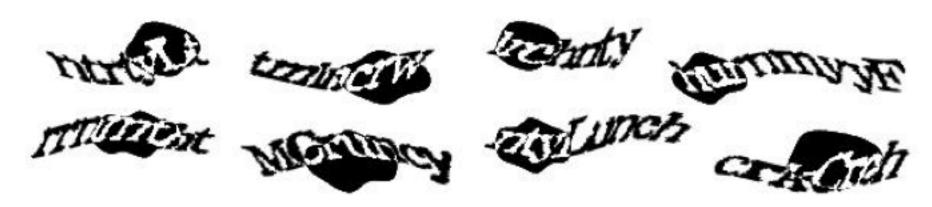
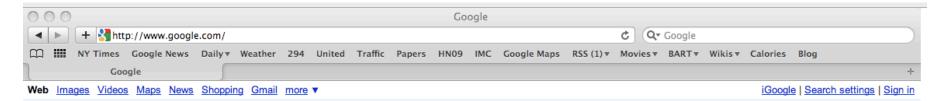


Figure 4: Examples of images from the hard CAPTCHA puzzles dataset.

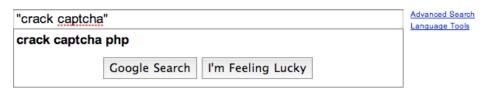
#### Asirra

Asirra is a human interactive proof that asks users to identify photos of cats and dogs. It's powered by over **two million photos** from our unique partnership with <u>Petfinder.com</u>. Protect your web site with Asirra — free!



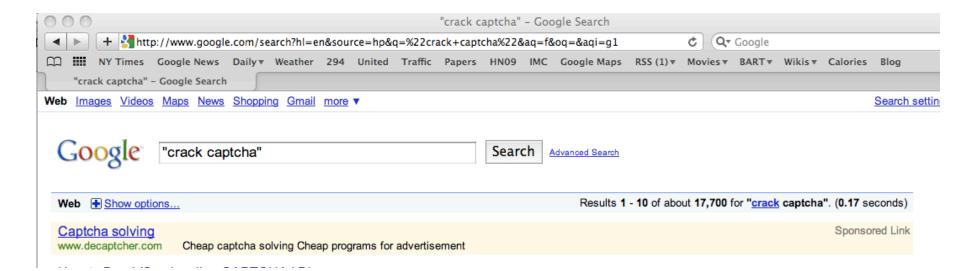






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Using the advertisement in blogs, social networks, etc significantly increases the efficiency of the business. Many services use pictures called CAPTCHAs in order to prevent automated use of these services.

Solve CAPTCHAs with the help of this portal, increase your business efficiency now!

#### Follow these steps:

Register

Login and follow the link inside to load funds to your account.

Your request will be processed ASAP.

#### You pay for correctly recognized CAPTCHAs only

The price is \$2 for 1000 CAPTCHAs. We accept payments from \$10.

If you use a third-party software the price could be different, contact the software vendor for more information.

Hi! I want to bypass captcha from my bots. Bots have different IPs. Is it possible to use your service from many IPs?

We have no restrictions about IP: with DeCaptcher you can bypass CAPTCHA from as many IPs as you need.

#### Hi. I need to crack captcha. Do you provide a captcha decoders?

DeCaptcher CAPTCHA solving is processed by humans. So the accuracy is much better than an automated captcha solver ones

Language	Example	AG	BC	BY	СВ	DC	IT	All
English	one two three	51.1	37.6	4.76	40.6	39.0	62.0	39.2
Chinese (Simp.)	- = =	48.4	31.0	0.00	68.9	26.9	35.8	35.2
Chinese (Trad.)	- = =	52.9	24.4	0.00	63.8	30.2	33.0	34.1
Spanish	uno dos tres	1.81	13.8	0.00	2.90	7.78	56.8	13.9
Italian	uno due tre	3.65	8.45	0.00	4.65	5.44	57.1	13.2
Tagalog	isá dalawá tatló	0.00	5.79	0.00	0.00	7.84	57.2	11.8
Portuguese	um dois três	3.15	10.1	0.00	1.48	3.98	48.9	11.3
Russian	один два три	24.1	0.00	0.00	11.4	0.55	16.5	8.76
Tamil	ஒன்று இரண்டு மூன்று	2.26	21.1	3.26	0.74	12.1	5.36	7.47
Dutch	een twee drie	4.09	1.36	0.00	0.00	1.22	31.1	6.30
Hindi	एक दो तीन	10.5	5.38	2.47	1.52	6.30	9.49	5.94
German	eins zwei drei	3.62	0.72	0.00	1.46	0.58	29.1	5.91
Malay	satu dua tiga	0.00	1.42	0.00	0.00	0.55	29.4	5.23
Vietnamese	một hai ba	0.46	2.07	0.00	0.00	1.74	18.1	3.72
Korean	일 이 삼	0.00	0.00	0.00	0.00	0.00	20.2	3.37
Greek	ένα δύο τρία	0.45	0.00	0.00	0.00	0.00	15.5	2.65
Arabic	ثلاثة اثنين واحد	0.00	0.00	0.00	0.00	0.00	15.3	2.56
Bengali	এক দুই তিন	0.45	0.00	9.89	0.00	0.00	0.00	1.72
Kannada	ಒಂದು ಎರಡು ಮೂರು	0.91	0.00	0.00	0.00	0.55	6.14	1.26
Klingon	1	0.00	0.00	0.00	0.00	0.00	1.12	0.19
Farsi	سه دو یک	0.45	0.00	0.00	0.00	0.00	0.00	0.08

Table 2: Percentage of responses from the services with correct answers for the language CAPTCHAS.