

Why do Nigerian Scammers Say They are from Nigeria?

Mineria de Datos - ITAM

Carlos Petricioli, Liliana Millán, Amanda Balderas

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Nos referimos al artículo:

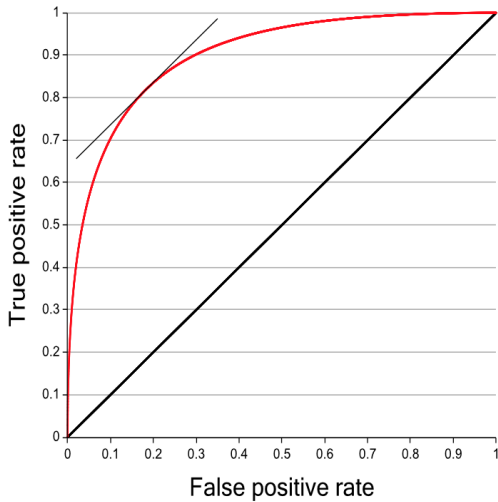
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Cormac Herley

Microsoft Research

Why do Nigerian Scammers Say They are from Nigeria?





- Attackers have false positives too.
 - False positive are targets that are attacked but yield nothing.
- False negatives are viable targets that go un-attacked.
 - Attacks as binary classification decisions.

- Attacks are seldom free.
 - Each potential target represents an investment decision to an attacker.
- Victim distribution model.
 - The attacker does not know with certainty that he will succeed unless he tries the attack.
 - Rich does not mean viable.

$$pdf(x|non - viable) = N(0, 1)$$

$$pdf(x|viable) = N(\mu, 1)$$

Tabla de variables

Quantity	Symbol
Number of users	N
Number of viable users	M
Victim density	$d = M/N$
Net gain from viable user	G
Cost of attack	C
True positive rate	t_p
False positive rate	f_p
Number viable users attacked	$d \cdot t_p \cdot N$
Number non-viable users attacked	$(1 - d) \cdot f_p \cdot N$

- Attack model.

-Attack if:

$$P\{viable|x_i\} * G > P\{nonviable|x_i\} * C$$

-Expected return:

$$\mathbb{E}[R] = (d \cdot t_p \cdot G - (1 - d)f_p \cdot C)N$$

- Ability to discriminate between viable and non viable targets.

$$cdf(x|viable) \text{ vs. } cdf(x|nonviable).$$

- Attack everyone, attack at random.

- Expected return:

$$\mathbb{E}[R] = (d \cdot G - (1 - d) \cdot C) \cdot N$$

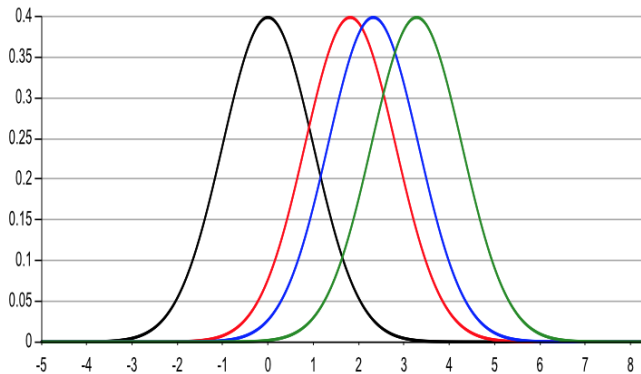
- Optimal Operating Point.

$$\frac{1-d}{d} + \frac{C}{G}$$

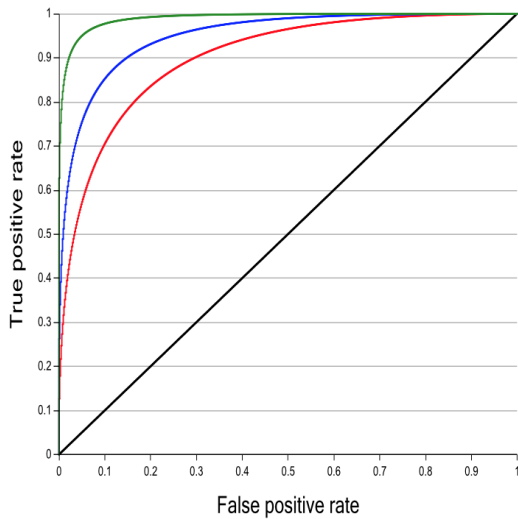
- As slope increases fewer users are attacked.
 - As slope increases not only are fewer total targets attacked, but fewer viable targets are attacked.
- If attacking everyone is not profitable slope must be greater than unity.

$$d > \frac{C}{G + C}$$

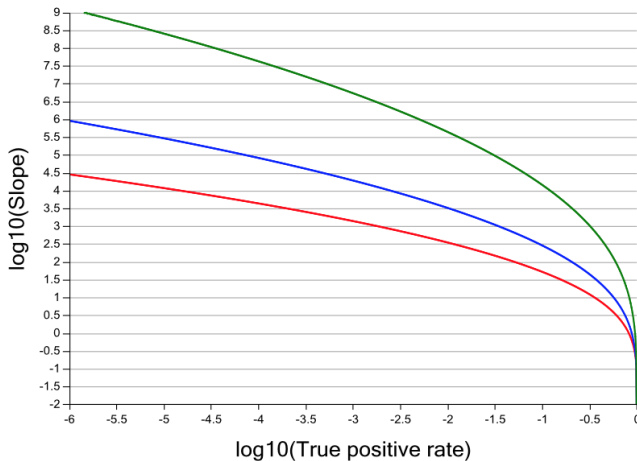
Distribuciones



ROC S

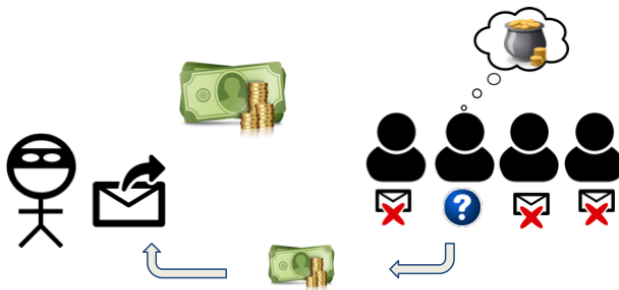


Pendiente vs t_p



Thus, as slope increases not only are fewer total targets attacked, but fewer viable targets are attacked.

Nigerian Scam



¿Por qué los defraudadores dicen que son de Nigeria?

- Quién de ustedes abriría/respondería un correo que tiene en el título algo de Nigeria????

→ (seguramente nadie!) ¿por qué?

Oportunidades en densidades de víctimas bajas

- Entrenar un buen clasificador requiere de muchos ejemplos etiquetados.
- Clasificadores con mayor precisión se construyen ‘fácilmente’ en dónde menos son requeridos (densidades grandes)

¿Cómo funciona?

- El que el correo sea tan obvio para saber que es spam cumple con su objetivo: ocupar muy pocos recursos para disminuir el universo de FP y enfocarse en los posibles TP → los ingenuos.

Utilizar los FP a nuestro favor

- Responder el correo sabiendo que están buscando víctimas
- Construir modelos que respondan automáticamente a estos correos