# Keyboard Acoustic Emanations

D. Asonov, R. Agrawal, "Keyboard Acoustic Emanations", in *Proc. of IEEE Symposium on Security and Privacy*, pp. 3-11, May 2004.

Presented by Daniel Flower

# Overview

- A neural network was trained to distinguish keys by the sound they make
- An attacker can know what is being typed by recording the sound of key presses

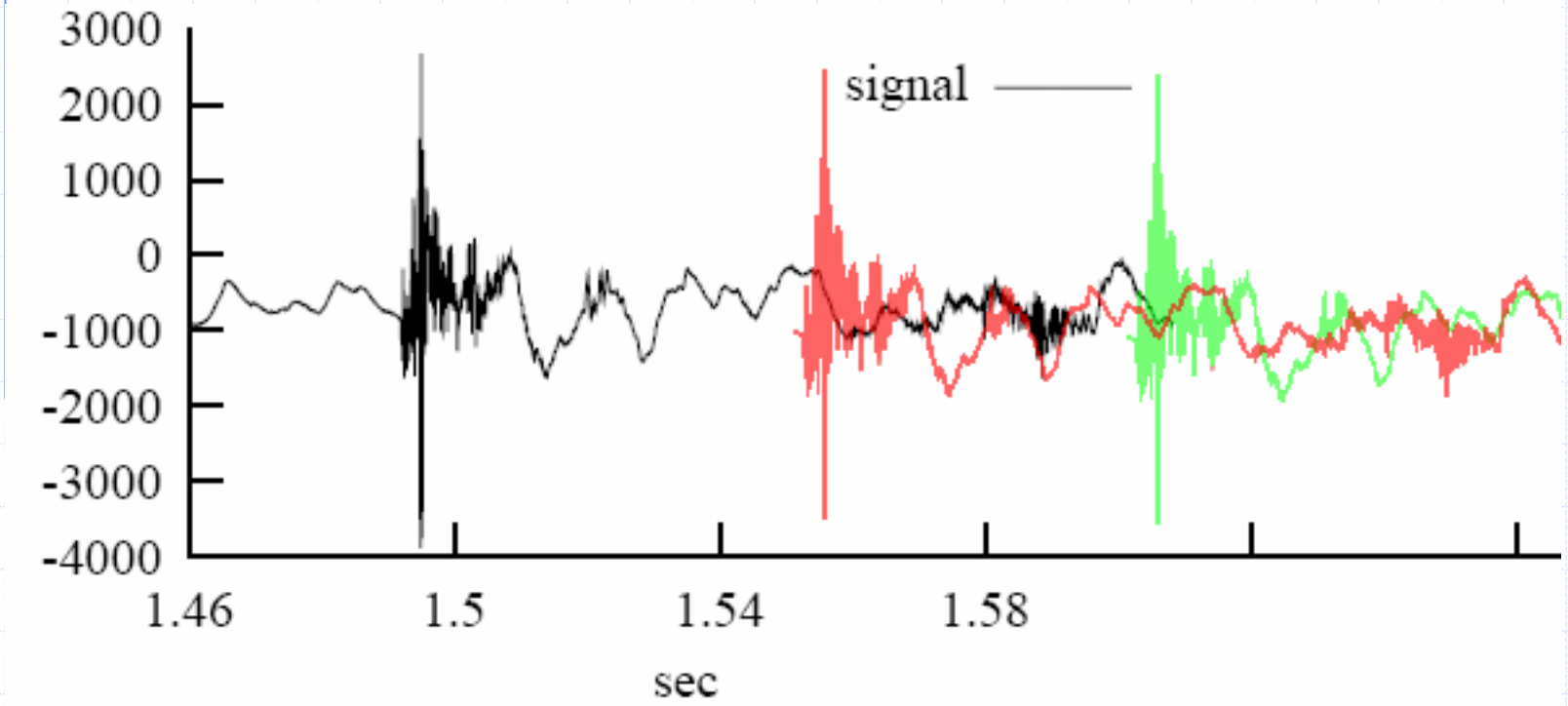
# Critique

- “The effect of distance”
  - Can distinguish 2 keys from 15 metres away
  - All other tests performed from 0.5 metres
- Tested different “typing styles”
  - Different force
  - One versus multi finger typing
  - Different people
  - What about speed?

# Typing speed

- Stated that one key press takes approximately 100 ms
- A fast typer can do up to 15 characters per second
- Can the network distinguish between key presses at higher speeds?

# Visualisation of sounds




Three overlapping keyboard clicks. It is unclear how well the network performs in this type of situation.

# Results

- A little misleading to state 88% accuracy
  - But knowing that a character is probably one of three characters gives “information gain”
  - Useful for finding passwords etc
    - You cpn unaersoand thit senuence, riaht?

# Critique Concluded

- I had not previously considered an attack of this kind
- Shows the importance of imagination for security experts

# Question

- A computer can do things we can't
  - E.g. distinguish different keyboard clicks
- As technology progresses, what type of security techniques and privacy issues will arise?

# Lipreading

- Will computers be trained to lip read long distance?

Picture used without permission, taken from http://www.visual-memory.co.uk/2001/html/page13.html

# 3-D scanning

- “I'd like to think that by now we could bounce a rock off a cave entrance in Afghanistan and tell from the sound whether or not Osama bin Laden is in the cave, if he's wearing underwear, the color of said undergarment and how long it's been since he washed it.”
  - *Nicholas Petreley*

# Any other ideas?

- As technology progresses, what type of security techniques and privacy issues will arise?

# References


- D. Asonov, R. Agrawal, "Keyboard Acoustic Emanations", in *Proc. of IEEE Symposium on Security and Privacy*, pp. 3-11, May 2004.
- N. Petreley, “Secrecy Is an Illusion”, *Computerworld,* http://www.computerworld.com/securitytopics/security/story/0,10801,69441p2,00.html accessed 17/08/2005