Effective Digital Forensics Research is Investigator-Centric

Robert J. Walls Brian Neil Levine Marc Liberatore Clay Shields
University of Massachusetts Amherst Georgetown University


CSI:
CRIME SCENE
INVESTIGATION


Crossing Jordan
MELINA KANAK
LD CASE
tvnz.co.nz
ONE
NUMB3RS

Digital forensics contends with the CSI-effect.

and security

Digital forensics contends with the CSI-effect.

Digital forensics lacks a solid scientific foundation.

Digital forensics struggles with practical challenges.

Digital forensics impacts people directly.


I WANT YOU

Security, privacy, & forensics?


UMASS
MINUTEMEN


G


MASSACHUSETTS
STATE
POLICE


CRIMES
AGAINST
CHILDREN
RESEARCH
CENTER


PENNSYLVANIA
STATE POLICE
TROOPER

5 principles for researchers.

Digital Forensics is Investigator-Centric

1

1: Forensics is Investigator-Centric

> Research is investigator driven.

1: Forensics is Investigator-Centric

> Research is investigator driven.

> Consider both goals and constraints.

1: Forensics is Investigator-Centric

> Research is investigator driven.

> Consider both goals and constraints.

> Break the rules lose the case.

1: Forensics is Investigator-Centric

> Research is investigator driven.

> Consider both goals and constraints.

> Break the rules lose the case.

> The rules change.

Forensics and law are inseparable

2

2: Forensics and law are inseparable

> Law is struggling to keep up.

2: Forensics and law are inseparable

> Law is struggling to keep up.

> How does seizure apply to data?

2: Forensics and law are inseparable

> Law is struggling to keep up.

> How does seizure apply to data?

> Unproven techniques are risky.

Investigations are about People

3

3: Investigations are about people

> Focus on the person, not the machine.

3: Investigations are about people

> Focus on the person, not the machine.

> Intent is outside of security domain.

3: Investigations are about people

> Focus on the person, not the machine.

> Intent is outside of security domain.

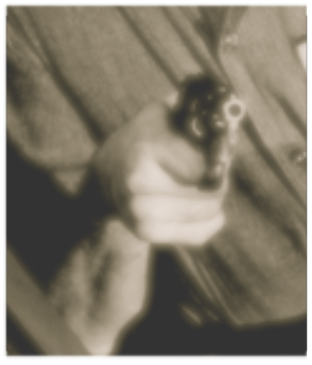
> Crime may not violate security.

Still useful to catch the Dumb Ones

4

4: Still useful to catch the dumb ones

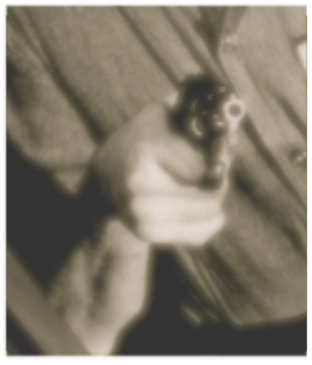
> Doesn't have to be foolproof to be useful.



4: Still useful to catch the dumb ones

> Doesn't have to be foolproof to be useful.

> Tech savvy criminals aren't more dangerous.



4: Still useful to catch the dumb ones

> Doesn't have to be foolproof to be useful.

> Tech savvy criminals aren't more dangerous.

> 40% is still good.

Keep it Simple

5

5: Keep it simple

> Make it simple for investigators to use it.

5: Keep it simple

> Make it simple for investigators to use it.

> Must be within Investigator capabilities.

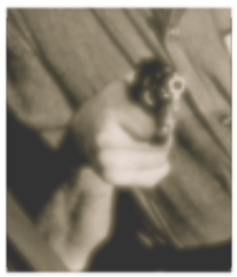
5: Keep it simple

> Make it simple for investigators to use it.

> Must be within Investigator capabilities.

> Often simpler non-computer solutions.

Forensics research without these principles is not forensics.



1: Forensics is Investigator-Centric.

2: Forensics and law are inseparable.

3: Investigations are about people.

4: Still useful to catch the dumb ones.

5: Keep it simple.

This work was supported in part by NSF awards CNS-1018615, CNS-0905349, and DUE-0830876, and in part by NIJ award 2008-CE-CX- K005.