Life Inside a Skinner Box: Confronting our Future of Automated Law Enforcement

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Disclaimer

The views in this talk are the authors’ and don’t reflect the official policy or position of the United States Military Academy, Samford University, the Department of the Army, the Department of Defense, or the United States Government.
Why?

We don't want to live in a police state
Meditation on the Law

Driving the Speed Limit on the Atlanta Perimeter

http://www.youtube.com/watch?v=1B-Ox0ZmVIU
Automated Law Enforcement

Any computer-based system that uses input from unattended sensors to algorithmically determine that a crime has been or is about to be committed then takes some responsive action, such as to warn the subject or inform the appropriate law enforcement agency.

Additionally, these systems will be capable of automatically imposing some form of punishment. Our proposed conceptualization of automated law enforcement is based on a model that is subject to automation at various points.
Three Points

1. Networked technologies have the potential to automate enforcement of the law.

2. Reckless and pervasive automation can have disastrous and unintended consequences.

3. This audience is in a unique position to defend society and appropriately confront law enforcement systems.
The Precursors are in Place
Increased Proliferation of Sensors
Increased Diversity and Sensitivity of Sensors

State Police Pull Over CT Medical Patient for Tripping Radioactivity Detector

Compulsory Sensing

US Senate Passes Bill Requiring All New Cars in America to Come Equipped with a Black-box by 2015

http://venturebeat.com/2012/04/19/black-boxes-for-cars/
Mobile Sensors

“Intended to provide the dismounted soldier with Reconnaissance, Surveillance, and Target Acquisition (RSTA) and laser designation. Total system weight, which includes the air vehicle, a control device, and ground support equipment is less than 51 pounds (23 kg) and is back-packable in two custom MOLLE-type carriers.”
Tech Transfer

Miami-Dade Police Department's Drones Ready to Fly
3 Billion+ Mobile Devices
Connected Cars

OnStar
We are Losing Control of our Technology

So when I get into a car—a computer that I put my body into—with my hearing aid*—a computer I put inside my body—I want to know that these technologies are not designed to keep secrets from me, or to prevent me from terminating processes on them that work against my interests.

- Cory Doctorow

* Note that this quote is taken a bit out of context. Mr. Doctorow was speculating that he may require a hearing aid at some point in the future.

http://boingboing.net/2012/01/10/lockdown.html
http://www.youtube.com/watch?v=HUEvRyemK5g
Facial Recognition

http://www.engr.du.edu/mmahoor/pictures/facial_feature.JPG

See also "Faces of Facebook: Privacy in the Age of Augmented Reality," Alessandro Acquisti, Ralph Gross, and Fred Stutzman. BlackHat USA, 2011.
National Identity Registries

India Launches Universal ID System with Biometrics
Crowdsourced Identification

Vancouver Riots

www.identifyrioters.com
Crowdsourced Crime Detection

Internet Eyes - “Detecting Crime as It Happens”
Augmented Reality

Google's Project Glass: One Day...

http://www.youtube.com/watch?v=9c6W4CCU9M4
Conversion of Analog Systems to Digital
Improved Algorithms

Cordon: 32 Vehicle Tracking Across 4 Lanes

http://www.engadget.com/2011/10/31/cordon-multi-target-photo-radar-system-leaves-no-car-untagged-
Increased Analytics

Wide Area Motion Imagery (WAMI)

See also Persistent Stare Exploitation and Analysis System (PerSEAS)
Location Tracking
Predictive Policing is on the Rise

California Police Praise Predictive Policing

http://www.officer.com/video/10604045/california-police-praise-predictive-policing
See also Samuel Greengard's "Policing the Future" in the March 2012 Communications of the ACM
Lots of Interested Parties

Federal, State, and Local Law Enforcement

Insurance Companies

* Note that we aren't stating that these specific entities are necessarily interested in Automated Law Enforcement, but in general we argue such types of entities are.
Well Intentioned Officials

New York City Soda Ban
“Strict Enforcement” Business Models Exist
August 25, 2011 - This is to remind all PBA members that any threat of retaliation for failure to perform a specific numbers of police actions (summonses, stop and frisks, arrests etc.) within a specified time period is a violation of the quota law and a grievable offense. We encourage all of our members who experience the threat of retaliation or punishment to file an immediate grievance with the PBA. The attached form was developed to expedite the grievance process in these cases.

Bait Cars

and Other Types of Bait...
And Illegal Enforcement...

And 'ol Charlies workin' out real good down at the corner store where the red light is. He sees them out-of-state plates two blocks away. Whey they get right on top of that green light, ol' Charlie pushes that secret button underneath the corner drug store counter. And that yellow light only lasts for a tenth of a second.

- Hoyt Axton (Speed Trap)
Some Regimes May Take Enforcement to a Whole Other Level
Citizens Who Want a Free Lunch...
Social Media
Successful Prototypes

- Bus Lane Enforcement
- Red Light Enforcement
- Speed Limit Enforcement
- Stop Sign Enforcement
- Congestion Charge
- HOV Lane
- Railroad Crossings
- Illegal Parking
- Illegal Turns

The Inadequacy of Law

Sniffer Dogs

Florida v. Harris

Flortida v. Jardines
So Where is all the Heading?

- Enabling technologies
- Ubiquitous sensors
- Promiscuous data sharing
- Security and financial incentives
- Well intentioned law enforcement
- Complacent citizenry
- Law lagging technology
- Successful prototypes
So How Does the Law Work?
Punishment Feedback Loop
Punishment Capabilities
Warning

Highway Speed Display
Embarrassment

Ohio Department of Rehabilitation and Correction
Offender Search Database

http://www.drc.ohio.gov/offendersearch/search.aspx
Citation / Points / Fine

Howard County, Maryland, Traffic Camera Fine
TASER and iRobot are Collaborating on a TASER-Shooting Robot
public bool ConfigureSnapshots
{
    get { return configureSnapshots; }
    set
    {
        configureSnapshots = value;
        snapshotsLabel.Visible = value;
        snapshotResolutionsCombo.Visible = value;
    }
}

/// <summary>
/// Provides configured video device.
/// </summary>
///
/// <remarks>
/// The property provides configured video device if user confirmed the dialog using "OK" button. If user canceled the dialog, the property is set to <see langword="null"/>.
/// </remarks>
class
{
    public VideoCaptureDevice VideoDevice
    {
        get { return videoDevice; }
    }
}

Source Code from iSpy Camera Security Project
Confinement

The New Generation III Alcohol and Marijuana Sensing House Arrest Ankle Bracelet With Active GPS Is Now Available for only $3.00 per day!

http://www.housearrestbracelet.com/
Confinement

The New Generation III Alcohol and Marijuana Sensing House Arrest Ankle Bracelet With Active GPS Is Now Available for only $3.00 per day!

Electronic Monitoring Just Got Better!

http://www.housearrestbracelet.com/
Samsung Techwin SGR-1 robot (left) is deployed along the Korean DMZ
Advantages and Disadvantages
More Secure Society
Safer Society
Increased Efficiency
Financial Incentives
Reduce Bias

Respect the badge
He earned it with his blood
Fear the gun
Your sentence may be death because
I am THE LAW!
You won't f**k around no more
I am THE LAW!
I judge the rich, I judge the poor
I am THE LAW!
Commit a crime, I'll lock the door
I am THE LAW!
Because in Mega-City
I am THE LAW!

- Anthrax (Judge Dredd / I am the Law)
Equal and Fair Enforcement of Law

Driving While Black

http://www.aclu.org/racial-justice/driving-while-black-racial-profiling-our-nations-highways
Equal and Fair Enforcement of Law

Crack

Cocaine

http://en.wikipedia.org/wiki/Cocaine
http://en.wikipedia.org/wiki/Crack_cocaine
Protection from Abuse

Dallas set to pay $1M for two Separate Police Abuse Cases

http://cityhallblog.dallasnews.com/2012/06/dallas-set-to-pay-1m-for-two-separate-police-abuse-cases.html/
Increased Opportunity for Abuse

McCarthy-era Propaganda Comic Book

http://en.wikipedia.org/wiki/McCarthyism
False Positives

Please put down your weapon, you have 20 seconds to comply...

<puts down weapon>
You now have 15 seconds to comply
I am now authorized to use physical force
...
Dick, I am very disappointed...
Sir, I'm sure its only a glitch...

ED-209

http://www.youtube.com/watch?v=A9l9wxGFl4k
False Negatives
Misidentification

"If they have that kind of difficulty with a member of Congress, how in the world are average Americans, who are getting caught up in this thing, how are they going to be treated fairly and not have their rights abused?"

- Senator Ted Kennedy
Less Compliant Populace
Risk of Unproportional Response
Social Control
Loss of Power

Montgomery County Maryland Police “Photographed Speeding Past Camera with Extended Middle Finger”

http://www.aclu.org/racial-justice/driving-while-black-racial-profiling-our-nations-highways
Lost Jobs
Questions Necessary to Confront Automated Law Enforcement

Method of Implementation
Control
Discretion
Perfection of Enforcement
Legal Integration of Algorithms
Preemptive / Post Hoc Enforcement
System Error / Malfunction
Administrative Burden
Procedural Safeguards
The Social Cost of Automation
Perfect Enforcement of the Law

No Jaywalking

http://en.wikipedia.org/wiki/File:Singapore_Road_Signs_-_Restrictive_Sign_-_No_jaywalking.svg
Loss of Human Discretion
Automation Bias
Chilling Effects
Overflowing the System
Societal Harm
Analysis
Procedural Safeguards

Due Process
Privacy
Freedom of Expression
The Necessity Defense
Transparency
Countermeasures
Countermeasures

Defeat the Sensor
- Detect
- Monitor
- Bypass
- Shield
- Exploit sampling rate
- Scattering
- Disable
- Destroy
- Jam
- Spoof
- Camouflage

Defeat the Network
Defeat the Processing

For more see our HOPE 9 talk

and more...
Competing Sensors

GPS Defense Against Radar
Algorithmic Laws?

Cruise Control set to 42 mph
Research Agenda

• Metrics to Assess Risk/Benefit
• Design for Transparency
• Design for Accountability
• Manual Overrides
• Built-in Security
This isn't Going to Happen Overnight

Cuyahoga River Fire
Be Careful What You Build
Three Points (redux)

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For More Information...


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