

Artificial Intelligence in Justice

Myunghoon Roh, Ph.D.
Assistant Professor
Salve Regina University



Agenda

1) Introduction

2) AI in the Criminal Justice System
   - AI for Crime Detection and Crime Investigation
   - AI for Crime Prediction and Crime Prevention
   - AI in Sentencing and Correction

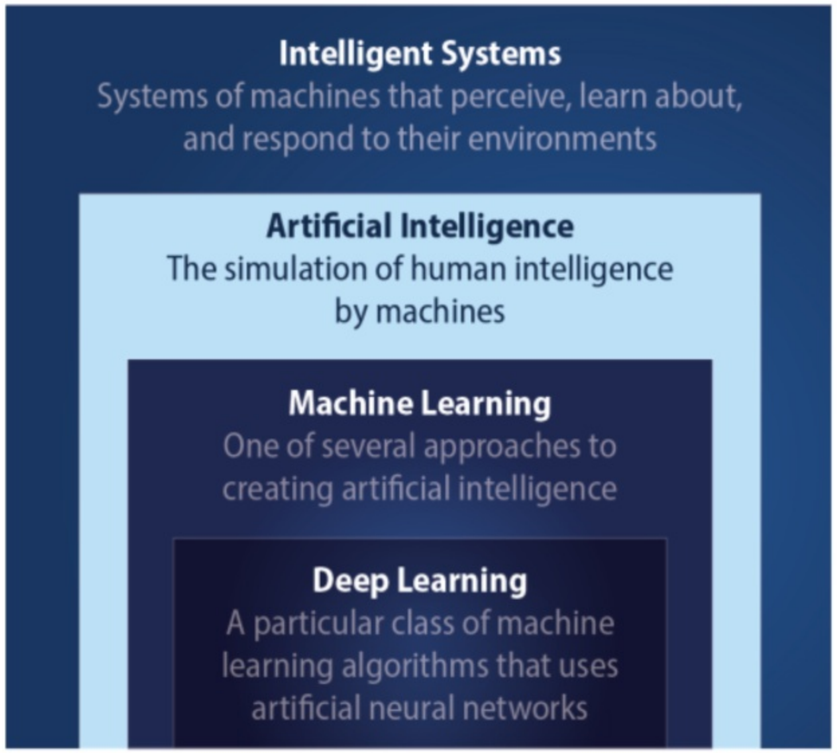
3) Constitutional Challenges

4) Considerations for Successful Use of AI

What is AI?

"**Artificial Intelligence**" is not a single piece of hardware or software, but rather, a constellation of technologies that gives a computer system the ability to solve problems and to perform tasks that would require human intelligence".

Robert Atkinson, "'It's Going to Kill Us!' and Other Myths About the Future of Artificial Intelligence" (2016) Information Technology 50 at 3.



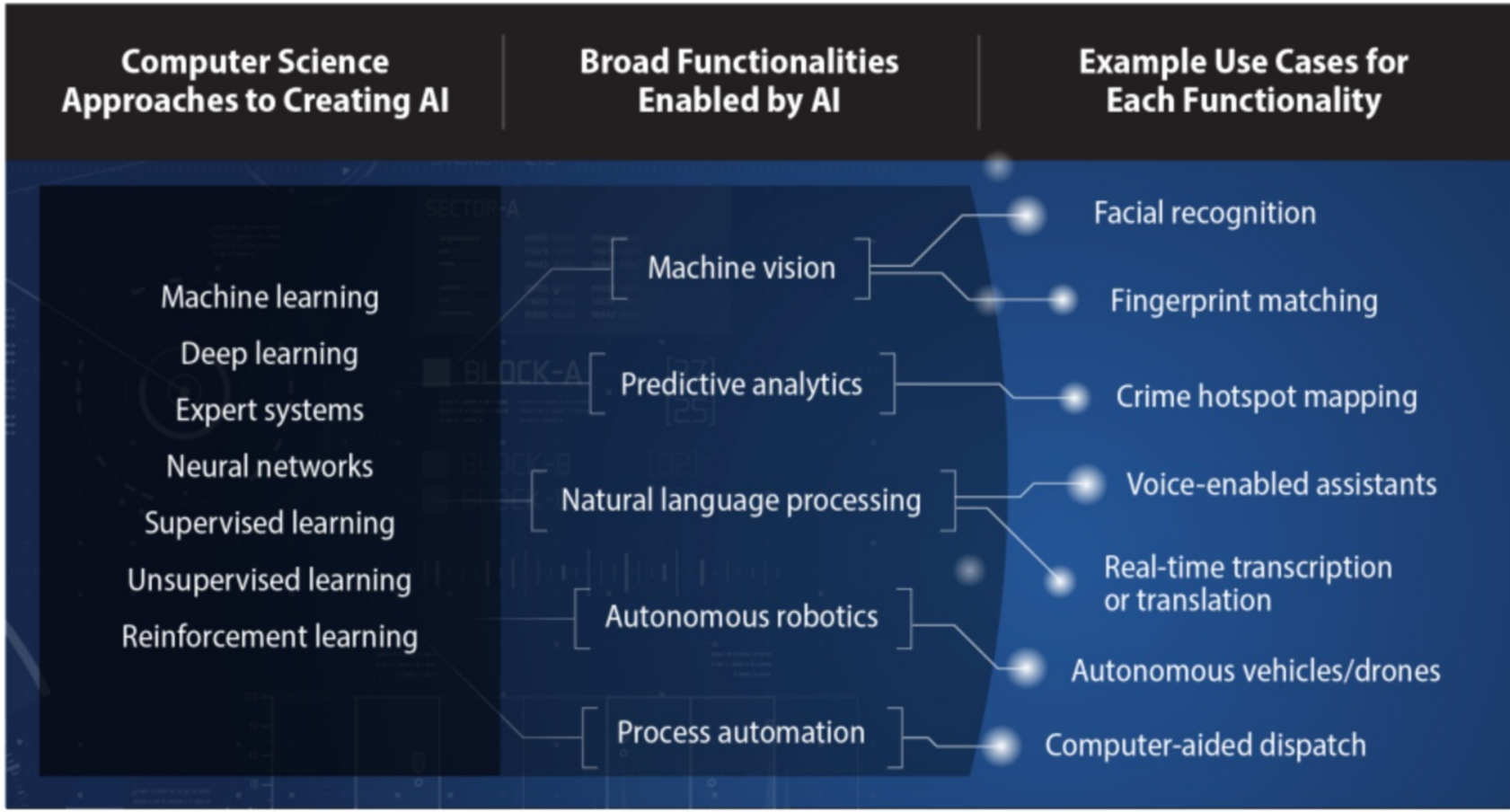
Redden, J., Dix, M. O., & Criminal Justice Testing and Evaluation Consortium. (2020). Artificial Intelligence in the Criminal Justice System. U.S. Department of Justice, National Institute of Justice, Office of Justice Programs. http://cjtec.org/



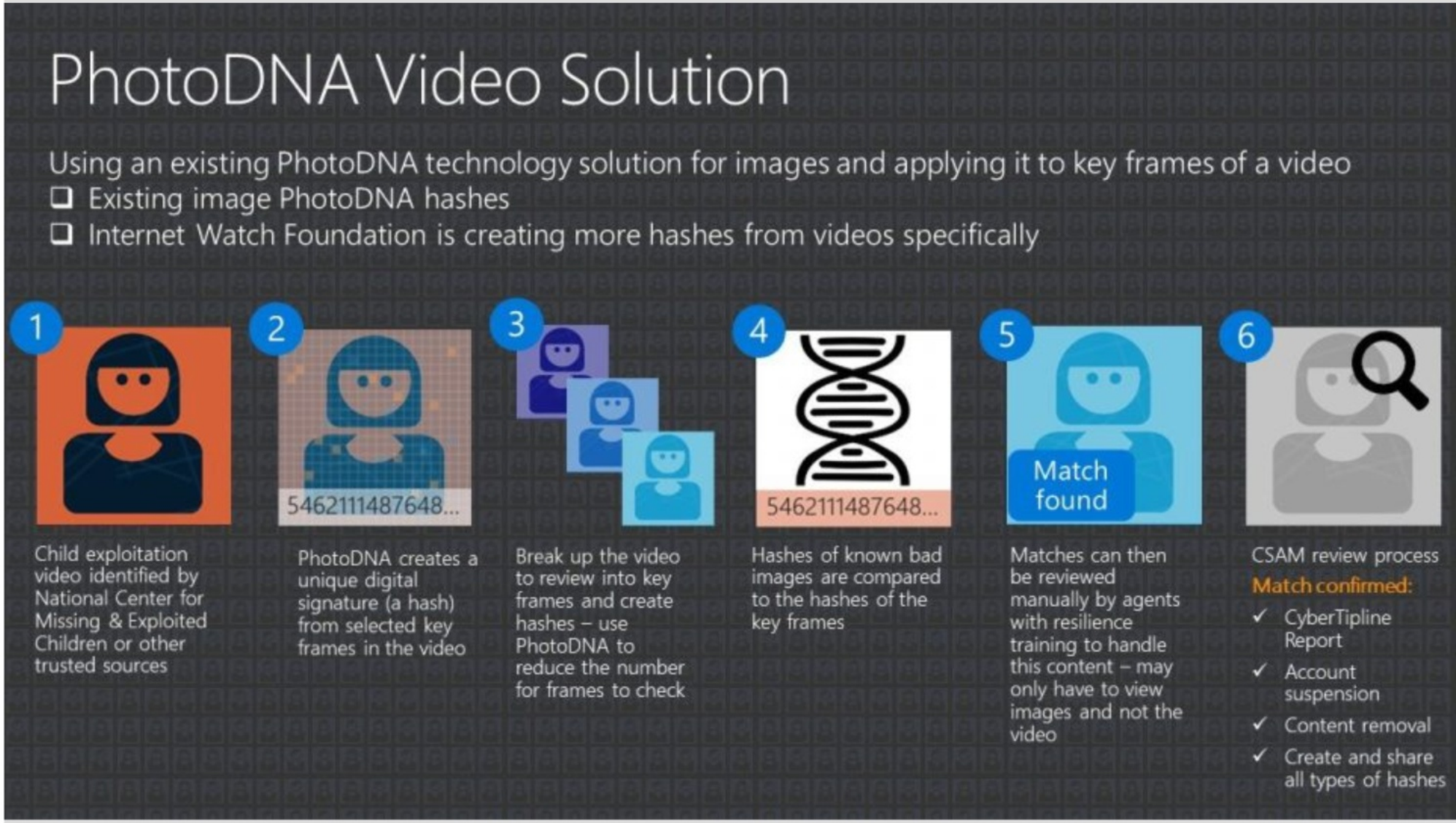
AI for Crime Detection & Crime Investigation

Technology is already being used to detect the occurrence of crime. AI is simply a new addition to determine when a crime may be happening or has already happened.

dden, J., Dix, M. O., & Criminal Justice Testing and aluation Consortium. (2020). Artificial Intelligence in e Criminal Justice System. U.S. Department of Justice, tional Institute of Justice, Office of Justice Programs. tp://cjtec.org/



Object Classification



How PhotoDNA for Video is being used to fight online child exploitation. Microsoft (retrieved from https://news.microsoft.com/on-the-issues/2018/09/12/how-photodna-for-video-is-being-used-to-fight-online-child-exploitation/)



Object Recognition

Police officers may also want to detect the possible existence of criminal activity depicted within an image. Law enforcement may use image recognition software to corroborate findings of criminal activity, by focusing on the identification of an individual instance within the imagery.

FACEPTION	FACEPTION	FACEPTION	FACEPTION	FACEPTION
Screening	**Surveillance**	**Database**	**Investigative**	**Audience**
On-demand profiling of selected person at border controls, checkpoints and other environments in real time	Ongoing profiling of individuals captured on wide area surveillance cameras in public areas in real time	Batch scanning of image databases to enrich profiles and detect potential offenders	Scanning of image or video records to identify relevant suspects	Live and After the Fact scanning of surveillance video feeds to identify audience patterns and potential group threats
Use: Border control, access control, authorities mobile devices	**Use:** Government building, airports, train stations, landmarks, shopping malls	**Use:** Immigration, Visa, Driving license. Airports traveler list	**Use:** Crime Investigation, Intelligence	**Use:** Stadiums, city centers and other crowded areas

(retrieved from https://www.faception.com/hls-and-public-safety)



Gunshot Detection

Seeks to detect the occurrence of gunfire and determine the precise location of the gunshot.



1 Gun is fired

When a gun is fired, the sound of a muzzle blast radiates outward.

2 Gunshot is Detected and Located

Acoustic sensors are triggered by the impulsive sound. The sound is classified as a gunshot through a process of machine classification. Sound triangulation determines the precise location.

3 Gunshot is Reviewed

The data is relayed to the ShotSpotter Incident Review Center where analysts quickly audit the data and publish confirmed gunshots to police.

4 Police Respond

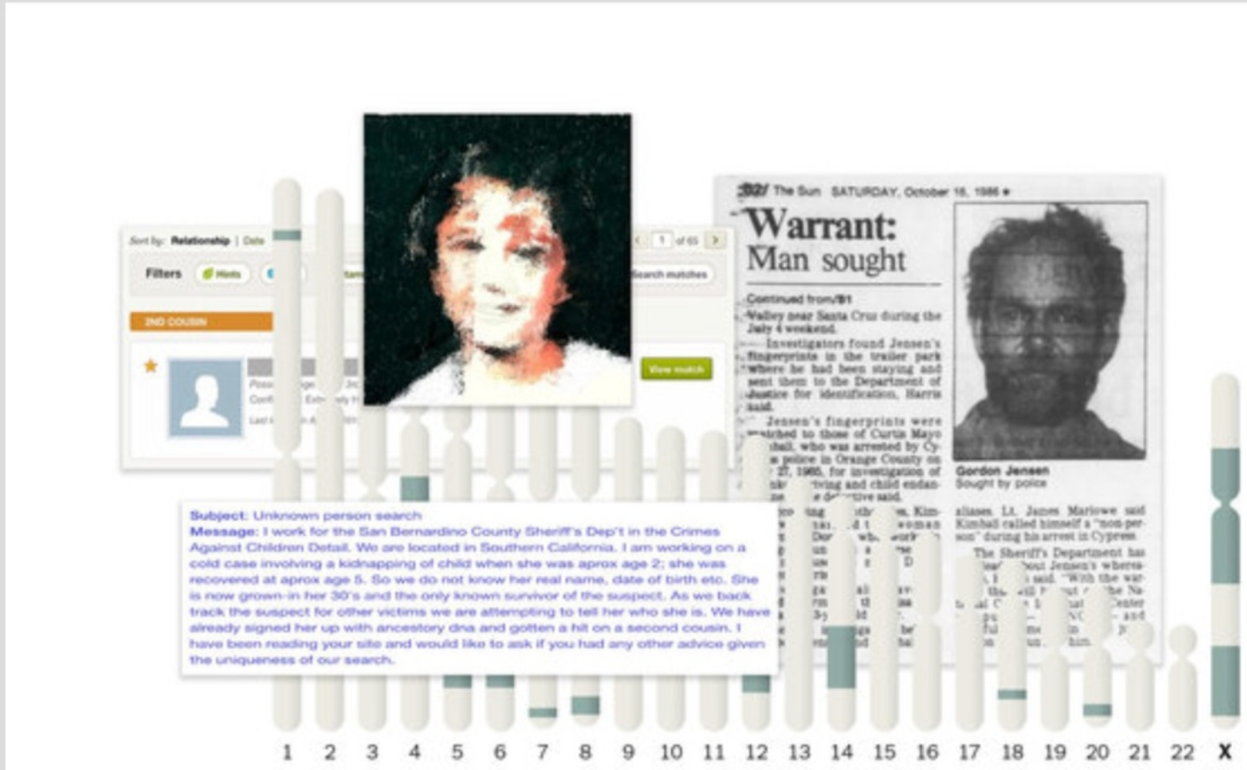
Alerts are sent to dispatch centers and patrol officers' smartphones and MDTs for immediate response. The entire process takes less than 60 seconds.

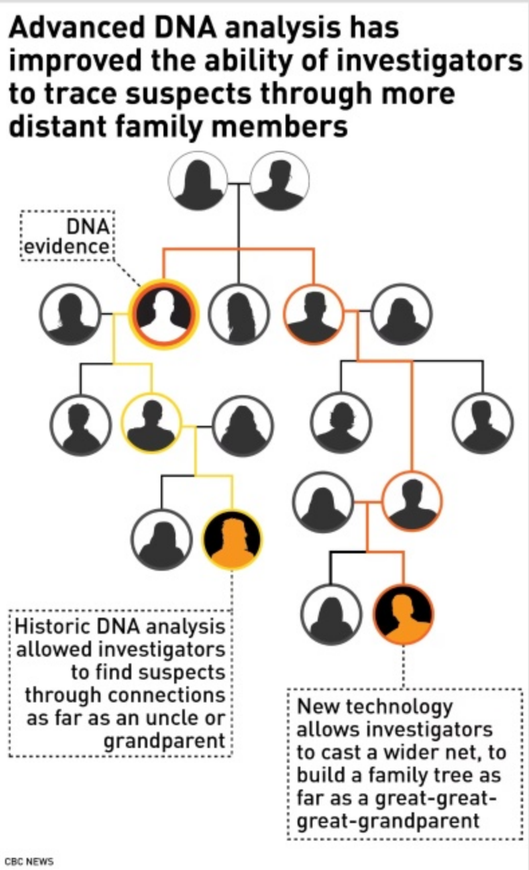
Save Lives and Find Critical Evidence with The Leading Gunshot Detection System Locate Shootings in Seconds for Rapid Precise Response (retrieved from https://www.soundthinking.com/law-enforcement/leading-gunshot-detection-system/)



DNA Analysis

Law enforcement would want to collect and analyze genetic material at a crime scene to determine who was present when the alleged crime occurred what their role may have been in the altercation, where the crime occurred and whether protagonists of the incident can be tied to previous solved or unsolved crimes.



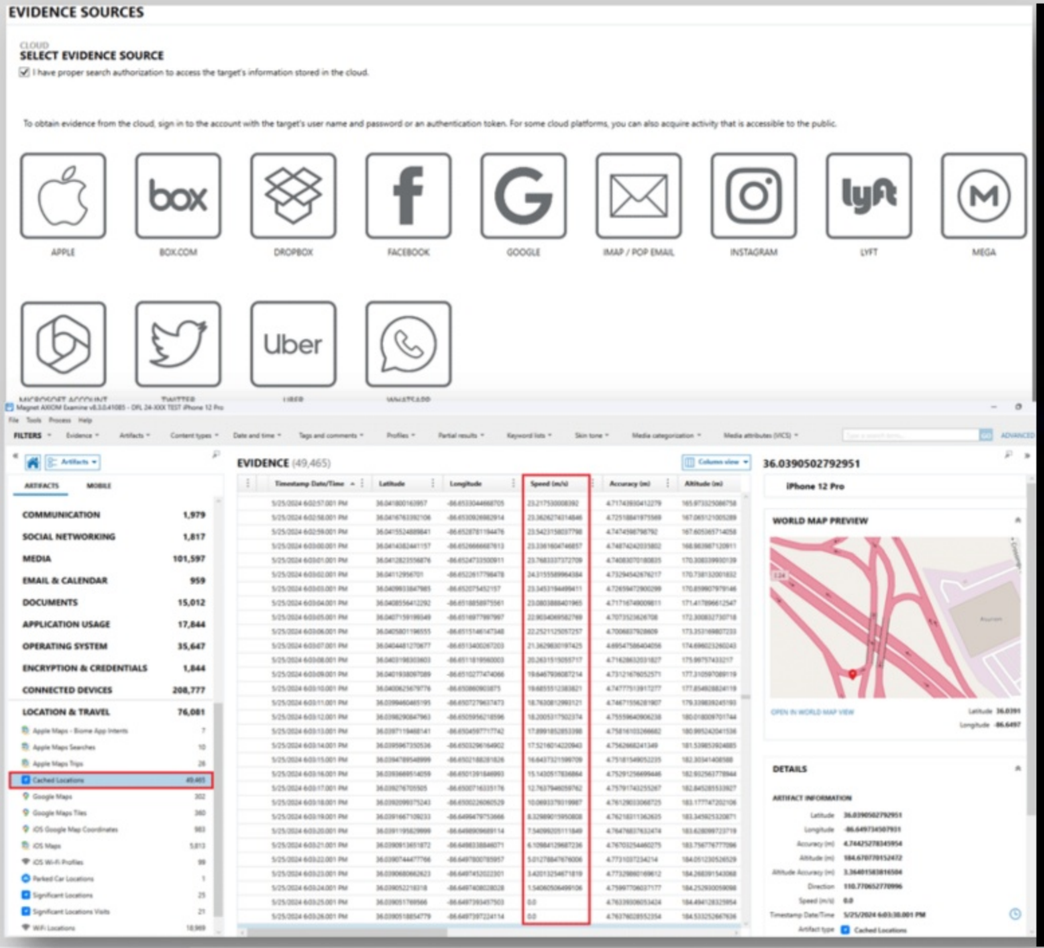


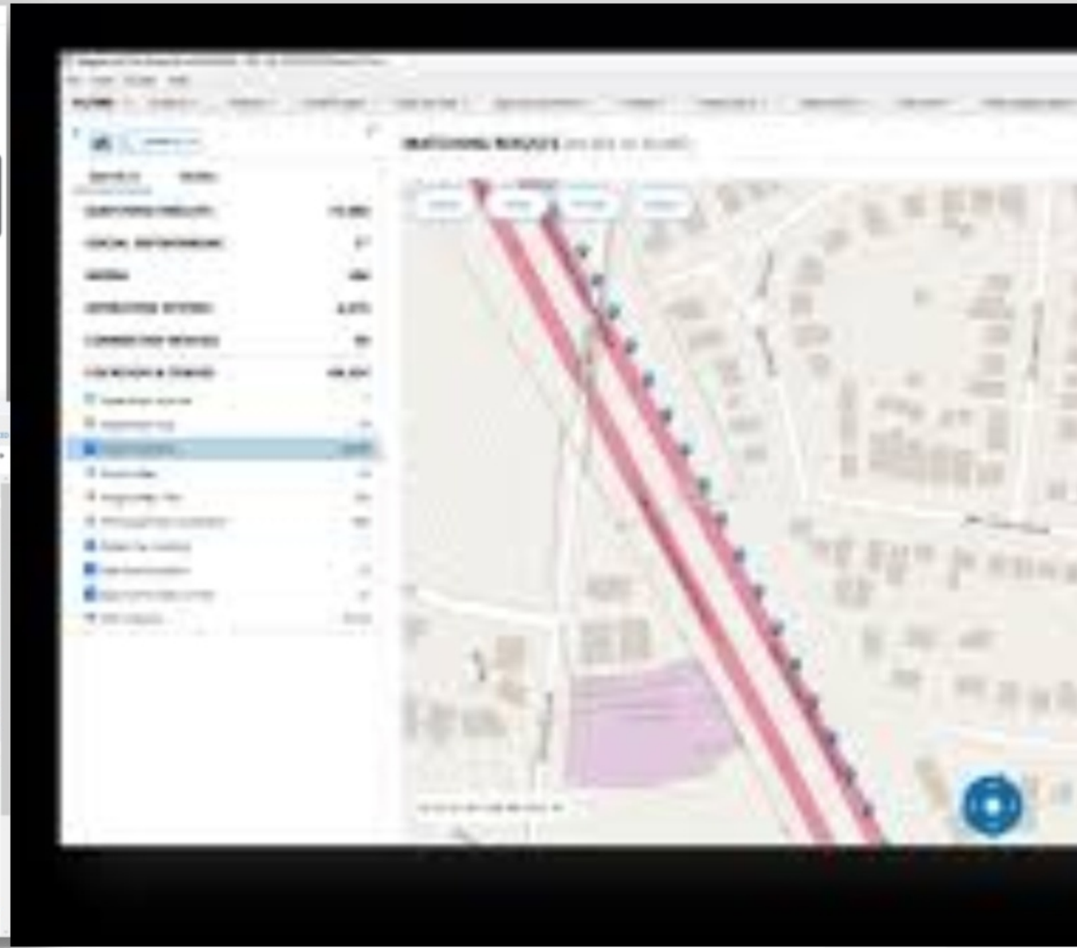
Vancouver police using same DNA technique that caught suspected Golden State Killer; Investigators have new options for matching DNA found at the scene of a Vancouver homicide in 2003 (retrieved from https://www.cbc.ca/news/canada/british-columbia/golden-state-killer-dna-vancouver-cold-case-leonardo-1.5145144)



Digital Forensics

Also called computer forensics, is the work of extracting and analyzing digital material found in electronic devices to turn in into evidence



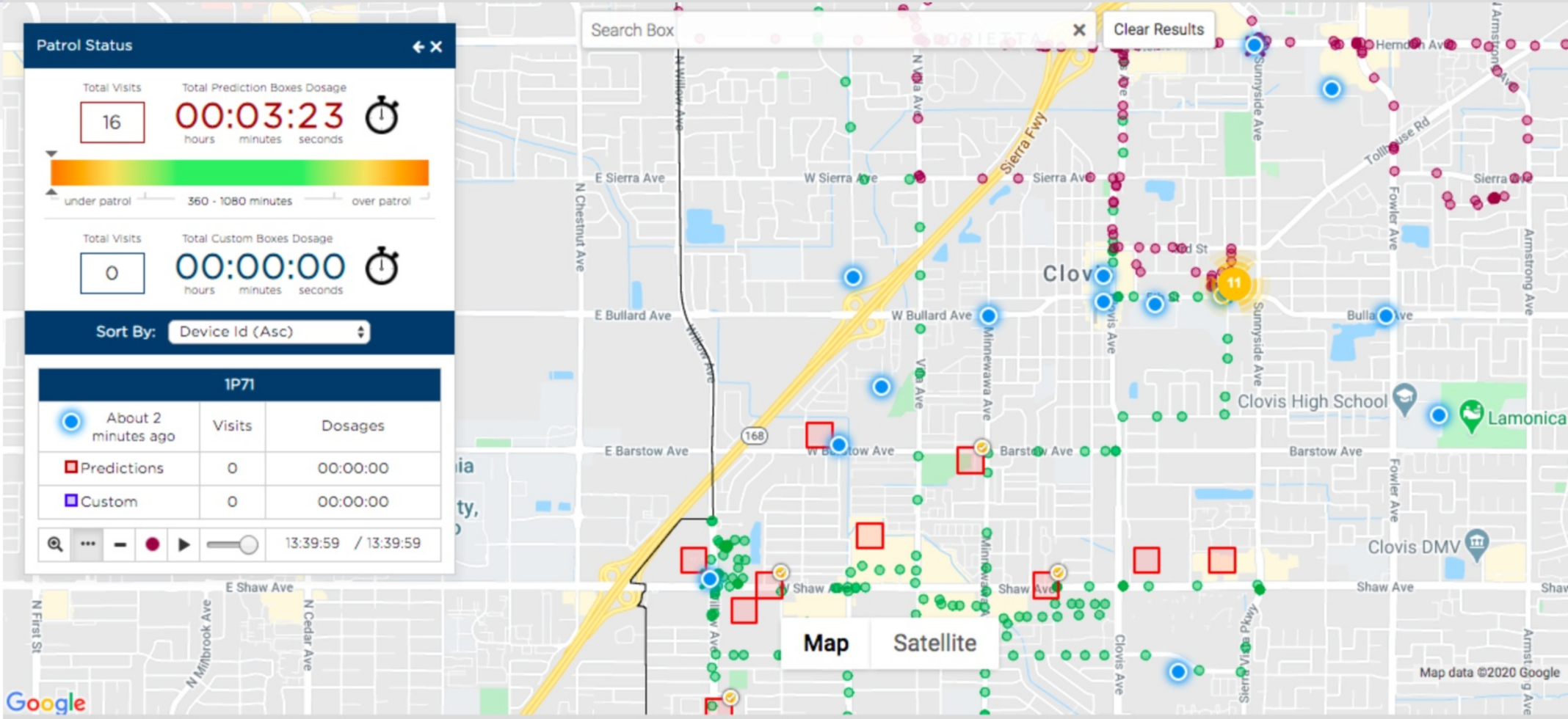


How Magnet Axiom can enhance a vehicle accident investigation. MAGNET FORENSICS (2024) (retrieved from https://www.magnetforensics.com/blog/axiom-for-a-vehicle-accident-investigation/#:~:text=Axiom%20analyzes%20all%20types%20of,easy%2Dto%2Dunderstand%20format)



AI for Crime Prediction & Crime Prevention

AI seeks to identify the times and locations where specific crimes are most likely to occur so that these areas can be patrolled to prevent those crimes from occurring.



PredPol: A Case of Mistaken Identity. SANTA CRUZ WORKS. (retrieved from https://www.santacruzworks.org/news/the-mistaken-identity-of-predpol)

Court's Needs that AI Might Address

Court Needs	Example Criminal Court Challenges
Managing Workforce Staffing and Resources	Adequate staffing and recruitment, specialized staff, training, retention, and locality (urban versus rural)
Improving Court Operations	Information-sharing, victim witness or juror management, facilities management, security, cybersecurity, resource allocation, and language translation
Processing and Managing Digital Information	Data volume, redaction, transcription, data storage, data management, data ownership with third-party data, data transparency, and data quality
Improving Case Management and Outcomes	Evidence management, case law, witness and community engagement, multimedia, plea bargaining, risk assessments, pretrial legislation, and sentencing guidelines
Maintaining Accountability	Brady and Giglio issues, data management, and wrongful conviction
Creating Partnerships and Collaboration	Technology development, ethical alignment, and information-sharing

Automated Court Reminders System 'eCourtDate'



https://app.court.gov/

Demo Dashboard

U. Grant: You have an outstanding traffic fine due on 07/01/2025 to Municipal Court. Click here to pay.

READ
30 seconds ago
From (456) 432-2345
To (890) 345-5678

Zachary Taylor: Your court date is scheduled on 12/04/2025 at 11:10 AM for case 54321. Show up to court to avoid an arrest warrant.

DELIVERED
1 minute ago
From (456) 432-2345
To (765) 321-9876

Franklin Pierce: You have an outstanding traffic fine due on 07/01/2025 to Municipal Court. Click here to pay.

READ
1 minute ago
From (456) 432-2345
To (321) 234-5678

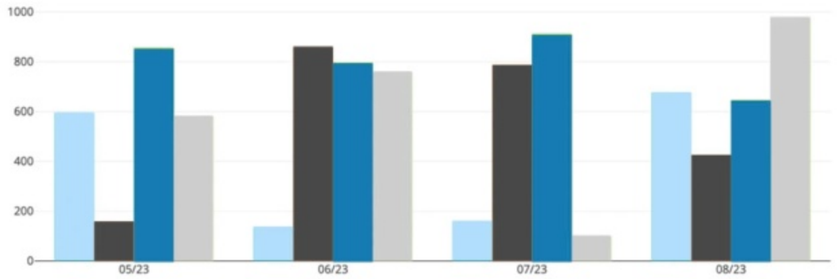
Payment Link
This link is valid for one hour. Click here to pay.

READ
2 minutes ago
From (456) 432-2345
To (789) 654-8765

Appearance Rates by Date

Share

This dashboard shows in-person appearance rates based on the distance of court from the defendant's address.



TOTAL	AVERAGE	MINIMUM	MAXIMUM
9,418	588.625	99	977

Chart Data

LOCATION	05/23	06/23	07/23	08/23
123 Justice Ave	594	136	159	676
Circuit Court - 7654 Liberty St	159	859	788	426
Probation Office - 8901 Democracy Ave	854	796	910	646
Juvenile Services - 789 Independence Dr	581	758	99	977

Modernize Access to Justice in a Few Clicks; The complete communication platform for courts and law enforcement (retrieved from https://ecourtdate.com/)

AI in Sentencing



The Public Safety Assessment (PSA)

Following a person's arrest, a judge must decide whether that person should:

be released to await trial.

be detained in jail to await trial.

A judge considers many factors in making this decision. One tool that judges may use to help make this decision is the PSA.

The PSA produces a score that represents the likelihood that a defendant who is released before trial will commit a new crime or will fail to appear for a future court appearance.

6 High risk
5
4
3
2
1 Low risk

The PSA also flags the small number of defendants who pose an elevated risk of committing a crime of violence if released before trial.

The PSA score is calculated based on nine factors.

- Current violent offense
- Pending charge at the time of the offense
- Prior misdemeanor conviction
- Prior felony conviction
- Prior violent conviction
- Prior failure to appear pretrial in past 2 years
- Prior failure to appear pretrial older than 2 years
- Prior sentence to incarceration
- Age at current arrest

The PSA does NOT look at any of the following factors:

race
gender
income
education
home address
drug use history
family status
marital status
national origin
employment
religion

The PSA provides information that is race- and gender-neutral. It helps guide pretrial decision making in an effort to increase safety, reduce taxpayer costs, and enhance fairness and efficiency in the system.

PSA
Race- and gender-neutral
Objective

The PSA was developed from research using data from across the United States.

The PSA score is not the only information that a judge considers, and the final decision will always be made by a judge.

For more information about the PSA, please visit www.arnoldfoundation.org.

Data-Driven Tools Increasingly Aid Judges in Pretrial Jail Decisions; As Use of Algorithms Expands, Questions Emerge Over Effectiveness and Fairness. Wisconsin Center for Investigative Journalism (retrieved from https://wiscontext.org/data-driven-tools-increasingly-aid-judges-pretrial-jail-decisions)

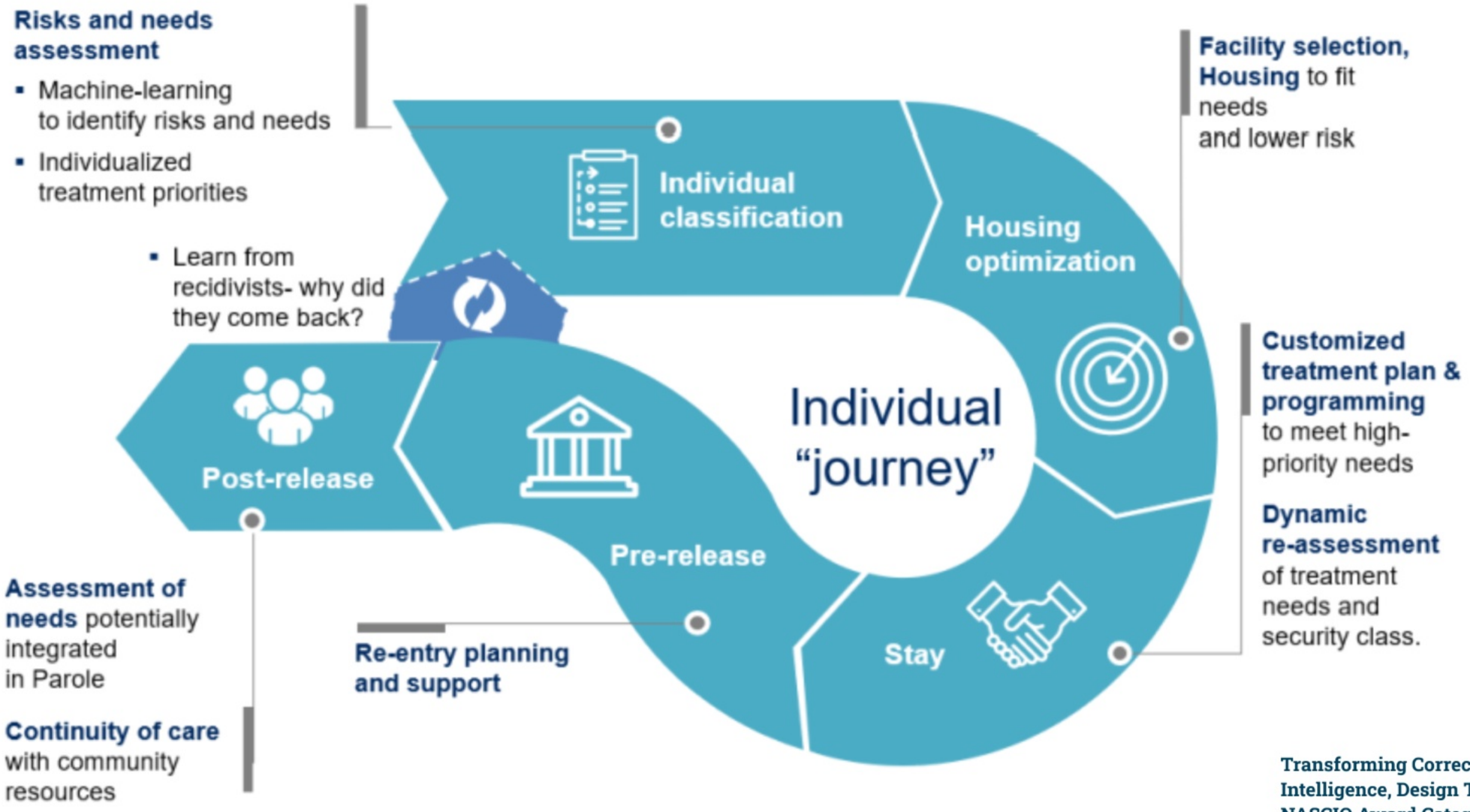


AI Applications in Corrections

Broadly speaking, AI solutions can help the corrections field **make decisions** and **perform tasks**

	Make a Decision	Perform a Task
Jails	Determine whether a pretrial defendant should be detained. Select which rehabilitation services or type of supervision are needed for defendants.	Complete intake forms and risk/needs assessments. Aid in processing discharges.
Prisons	Assign cellmates and units. Select appropriate services for inmates. Respond appropriately to behavioral issues. Determine whether a prisoner should be granted parole.	Detect contraband. Translate or transcribe calls in real-time. Monitor inmate communications. Predict inmate risk based on past records, interactions with other inmates, and prior misbehavior. Keep prisoners and officers safe and healthy.
Community Supervision	Develop a plan to prevent recidivism and promote positive, thriving outcomes. Select appropriate client services and connect clients with service providers in an efficient manner. Provide support to community supervision officers (CSOs).	Schedule client check-ins and issue reminders. Test for drug use. Monitor location.

Examples of AI in Corrections



Transforming Corrections Using Artificial Intelligence, Design Thinking and Digital (2018
NASCIO Award Category: Emerging & Innovativ
Technology State of Illinois.

Constitutional Challenges

- The 4th Amendment: Search & Seizure
- The Equal Protection Clause of the 14th Amendment
- The Due Process Clause of the 5th and 14th Amendments
- The Confrontation Clause of the 6th Amendment

Fourth Amendment: Search & Seizure

- The Fourth Amendment to the United States Constitution provides: "The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated . . . ."

- The Fourth Amendment shields against unreasonable government searches and seizures, protecting the rights of individual citizens from governmental intrusion into areas deemed private.



Fourteenth Amendment: Procedural Due Process

The Fourteenth Amendment right to due process works in tandem with other provisions in the Constitution to guarantee criminal defendants notice and an opportunity to be heard––essentially a fundamentally fair trial process before deprivation of life, liberty, or property.

Fourteenth Amendment: Equal Protection

- The Equal Protection Clause, “protects individuals from unequal laws or unequal applications of the law that stem from illegitimate government purposes or means.

- Laws are not evenly enforced when punishment depends on race, gender, or socioeconomic status, rather than the crime itself.

Sixth Amendment: Confrontation Clause

- The Confrontation Clause of the Sixth Amendment provides that "[i]n all criminal prosecutions, the accused shall enjoy the right . . . to be confronted with the witnesses against him."

- The Supreme Court has clarified that this requirement applies to witnesses' "testimonial statements," which may not be admitted unless the defendant has some opportunity for cross-examination.

Considerations for Successful Use of AI



Redden, J., Dix, M. O., & Criminal Justice Testing and Evaluation Consortium. (2020). Artificial Intelligence in the Criminal Justice System. U.S. Department of Justice, National Institute of Justice, Office of Justice Programs. http://cjtec.org/

Final Thoughts

With the aid of AI, police can make more arrests and apprehend more serious offenders. Similarly, AI can, if wisely used, enable prosecutors, courts, and corrections officials to concentrate their often-limited resources on violent and repeat offenders. Innovations in decision making, such as development of criteria and guidelines, improve the consistency of the criminal justice process.

References

Data-Driven Tools Increasingly Aid Judges in Pretrial Jail Decisions; As Use of Algorithms Expands, Questions Emerge Over Effectiveness and Fairness. Wisconsin Center for Investigative Journalism (retrieved from https://wiscontext.org/data-driven-tools-increasingly-aid-judges-pretrial-jail-decisions)

How Magnet Axiom can enhance a vehicle accident investigation. MAGNET FORENSICS (2024) (retrieved from https://www.magnetforensics.com/blog/axiom-for-a-vehicle-accident-investigation/#:~:text=Axiom%20analyzes%20all%20types%20of,easy%2Dto%2Dunderstand%20format)

How PhotoDNA for Video is being used to fight online child exploitation. Microsoft (retrieved from https://news.microsoft.com/on-the-issues/2018/09/12/how-photodna-for-video-is-being-used-to-fight-online-child-exploitation/)

Transforming Corrections Using Artificial Intelligence, Design Thinking and Digital (2018) NASCIO Award Category: Emerging & Innovative Technology State of Illinois.

PredPol: A Case of Mistaken Identity. SANTA CRUZ WORKS. (retrieved from https://www.santacruzworks.org/news/the-mistaken-identity-of-predpol)

Redden, J., Dix, M. O., & Criminal Justice Testing and Evaluation Consortium. (2020). Artificial Intelligence in the Criminal Justice System. U.S. Department of Justice, National Institute of Justice, Office of Justice Programs. http://cjtec.org/

Robert Atkinson, "'It's Going to Kill Us!' and Other Myths About the Future of Artificial Intelligence" (2016) Information Technology 50 at 3.

Take this with you.
Revisit anytime.

Missed something? Want to explore further?
Scan or click below to open this presentation.
Anytime, anywhere.

View presentation

