No. 26-1227

IN THE UNITED STATES COURT OF APPEALS FOR THE FOURTH CIRCUIT

LEE SCHMIDT; CRYSTAL ARRINGTON,

Plaintiffs-Appellants

v.

CITY OF NORFOLK; MARK TALBOT, in his official capacity as Norfolk Chief of Police,

Defendants-Appellees

On Appeal from the United States District Court for the Eastern District of Virginia at Norfolk

BRIEF OF *AMICI CURIAE* THE INNOCENCE PROJECT AND THE CENTER ON RACE, INEQUALITY, AND THE LAW AT NEW YORK UNIVERSITY SCHOOL OF LAW IN SUPPORT OF PLAINTIFFS-APPELLANTS

Matthew A. Wasserman
THE INNOCENCE PROJECT
40 Worth Street, Suite 701
New York, NY 10013
(212) 364-5340
mwasserman@innocenceproject.org

April 20, 2026

Counsel for Amici Curiae

UNITED STATES COURT OF APPEALS FOR THE FOURTH CIRCUIT

DISCLOSURE STATEMENT

- In civil, agency, bankruptcy, and mandamus cases, a disclosure statement must be filed by **all** parties, with the following exceptions: (1) the United States is not required to file a disclosure statement; (2) an indigent party is not required to file a disclosure statement; and (3) a state or local government is not required to file a disclosure statement in pro se cases. (All parties to the action in the district court are considered parties to a mandamus case.)
- In criminal and post-conviction cases, a corporate defendant must file a disclosure statement.
- In criminal cases, the United States must file a disclosure statement if there was an organizational victim of the alleged criminal activity. (See question 7.)
- Any corporate amicus curiae must file a disclosure statement.
- Counsel has a continuing duty to update the disclosure statement.

No. 26-1227 Caption: Lee Schmidt; Crystal Arrington v. City of Norfolk, Mark Talbot, in his official capacity as the Norfolk Chief of Police

Pursuant to FRAP 26.1 and Local Rule 26.1,

Innocence Project, Inc.
(name of party/amicus)

who is amicus curiae, makes the following disclosure:
(appellant/appellee/petitioner/respondent/amicus/intervenor)

1. Is party/amicus a publicly held corporation or other publicly held entity? ☐YES ☑NO

2. Does party/amicus have any parent corporations? ☐YES ☑NO
If yes, identify all parent corporations, including all generations of parent corporations:

3. Is 10% or more of the stock of a party/amicus owned by a publicly held corporation or other publicly held entity? ☐YES ☑NO
If yes, identify all such owners:

4. Is there any other publicly held corporation or other publicly held entity that has a direct financial interest in the outcome of the litigation? ☐YES ☑NO
If yes, identify entity and nature of interest:

5. Is party a trade association? (amici curiae do not complete this question) ☐YES ☐NO
If yes, identify any publicly held member whose stock or equity value could be affected substantially by the outcome of the proceeding or whose claims the trade association is pursuing in a representative capacity, or state that there is no such member:

6. Does this case arise out of a bankruptcy proceeding? ☐YES ☑NO
If yes, the debtor, the trustee, or the appellant (if neither the debtor nor the trustee is a party) must list (1) the members of any creditors' committee, (2) each debtor (if not in the caption), and (3) if a debtor is a corporation, the parent corporation and any publicly held corporation that owns 10% or more of the stock of the debtor.

7. Is this a criminal case in which there was an organizational victim? ☐YES ☑NO
If yes, the United States, absent good cause shown, must list (1) each organizational victim of the criminal activity and (2) if an organizational victim is a corporation, the parent corporation and any publicly held corporation that owns 10% or more of the stock of victim, to the extent that information can be obtained through due diligence.

Signature: /s/ Matthew Wasserman Date: 4/17/2026

Counsel for: Innocence Project, Inc. as amicus curiae

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UNITED STATES COURT OF APPEALS FOR THE FOURTH CIRCUIT

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No. 26-1227 Caption: Lee Schmidt; Crystal Arrington v. City of Norfolk, Mark Talbot, in his official capacity as the Norfolk Chief of Police

Pursuant to FRAP 26.1 and Local Rule 26.1,

The Center on Race, Inequality, and the Law at New York University School of Law
(name of party/amicus)

who is amicus curiae, makes the following disclosure:
(appellant/appellee/petitioner/respondent/amicus/intervenor)

1. Is party/amicus a publicly held corporation or other publicly held entity? ☐YES ☑NO

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Signature: /s/ Nina Loshkajian Date: 4/17/2026

Counsel for: The Center on Race, Inequality, and the Law at New York University School of Law as amicus curiae

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IDENTITY AND INTEREST OF AMICI CURIAE

The Innocence Project is a nonprofit organization dedicated to freeing the innocent, preventing wrongful convictions, and creating fair, compassionate, and equitable systems of justice for everyone. To date, it has freed or exonerated 257 innocent individuals, who were wrongfully incarcerated for a total of 4,102 years. In addition to representing wrongfully convicted individuals, the Innocence Project draws on lessons from past exonerations to pursue reforms aimed at preventing future miscarriages of justice, ensuring the reliability of evidence, and correcting practices that have produced stark racial disparities in wrongful convictions. Emerging surveillance technologies have increased wrongful conviction risks by eroding the presumption of innocence and leading investigators to rely on opaque machine processes to identify suspects—even when machines are error-prone or exculpatory evidence is available. When fallible technologies disproportionately target communities of color, they risk worsening well-documented racial disparities in wrongful convictions. The Innocence Project therefore seeks to ensure that these technologies are subject to appropriate empirical validation and judicial oversight.[1]

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[1]Amici curiae hereby state that no party's counsel authored this brief in whole or in part. No party, party's counsel, or person other than amici curiae, their members, and their counsel contributed money intended to fund the preparation or submission of this brief. Furthermore, all parties have consented to the filing of this amicus brief.

The Center on Race, Inequality, and the Law at New York University School of Law[2] (the "Center") confronts and challenges the array of American laws, policies, and practices that lead to racial oppression and injustice. By illuminating the history and impact of racism on law and society, the Center builds solutions to the injustice it causes and takes action to advance freedom and fairness, for everyone. The Center recognizes that machines and algorithms now make decisions about who is hired, who gets housing, who receives public benefits, and who is policed, often through opaque, automated systems that impose life-altering judgments. These tools, touted as neutral and efficient, often reproduce bias, operate without transparency, and leave people with little recourse when harm occurs. The Center challenges these harmful systems through litigation, policy advocacy, research, and collaborations that center the racial justice concerns at the intersection of technology and power. The Center aims not only to stop technological harm, but to reimagine how technology can advance justice, institutional accountability, and community power.

Amici share a compelling interest in mitigating the risks of wrongful detentions, wrongful arrests, and ultimately wrongful convictions, including those posed by the unfettered use of surveillance technologies.

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[2] The Center on Race, Inequality, and the Law is affiliated with New York University School of Law but does not purport to present the school's institutional views, if any, in this amicus curiae brief or otherwise.

SUMMARY OF ARGUMENT

Automatic license plate reader (ALPR) systems—and Flock's ALPRs in particular—routinely expose innocent people to wrongful detentions and arrests, ultimately increasing the risk of wrongful convictions. Because ALPRs photograph virtually every car that passes, the images they collect overwhelmingly target people and vehicles unconnected to any crime. When law enforcement nonetheless uses ALPR data to justify detentions, arrests, and prosecutions, especially in the absence of appropriate guardrails, it is virtually inevitable that law-abiding people will be targeted in the process. Indeed, Flock's ALPR systems have already led to detentions and arrests of people who committed no crimes.

These errors arise in part because ALPR systems, including Flock's, are hardly foolproof. Wrongful detentions have occurred because of both technological and human error: plate "misreads" by ALPR systems' computer vision models, failures by police to verify automated ALPR alerts, and officers improperly treating ALPR hits as sufficient to pursue charges when at best they established only general proximity to a crime scene. The sheer volume of data that Flock collects means that even low error rates can translate into large numbers of wrongful detentions—and the available empirical evidence suggests that error rates may in fact be substantial.

Moreover, ALPR alerts and search results can contribute to cognitive bias, leading investigators to disregard exculpatory information and over-rely on ALPR

data. Two forms of cognitive bias are especially likely to arise in the context of ALPRs: tunnel vision, which can lead police to ignore exculpatory evidence once they have decided on a suspect, and automation bias, which can induce investigators to uncritically follow machine outputs even when those outputs are demonstrably wrong. Taken together, these factors can lead—and have led—police to unquestioningly treat ALPR hits as grounds for suspicion, even when ALPR data are flawed, creating conditions ripe for baseless detentions and wrongful prosecutions.

These risks disproportionately impact communities of color. As a recent statistical analysis showed, Norfolk's ALPR cameras predominantly target majority-Black neighborhoods. In doing so, they parallel historical patterns of racially biased redlining and police surveillance. Moreover, ALPR data often combine with other surveillance data—some from equally or even more unreliable technology—to expose residents of majority-Black neighborhoods to heightened risks of unjustified police intrusion.

These practices create a two-tiered system of constitutional protection, diminish residents' privacy rights merely because of their proximity to flawed surveillance technology, and ultimately erode the presumption of innocence for communities of color. Consequently, they stand to perpetuate well-documented racial disparities in wrongful convictions, which already disproportionately harm Black people.

Because Norfolk's deployment of Flock's ALPR cameras overwhelmingly sweeps in innocent people's data, exposes people to detentions and arrests based on error-prone technology, and risks deepening existing racial disparities in government intrusion and wrongful convictions, amici respectfully urge this Court to find for Plaintiffs-Appellants and reverse the district court's grant of summary judgment.

ARGUMENT

I. Automatic License Plate Reader Systems Create a Profound Risk of Wrongful Detentions, Wrongful Arrests, and Ultimately Wrongful Convictions.

A. By sweeping in countless innocent people's data, ALPR systems have led to unjustified detentions and prosecutions.

1. Flock vehicle captures, searches, and "hotlist" alerts overwhelmingly target innocent people's location data and rarely yield actionable leads.

Flock cameras sweep in a staggering amount of vehicle information. The company advertises that it captures more than *twenty billion* plates each month across forty-nine states. *National LPR Network*, Flock Safety (last accessed Apr. 13, 2026).[3] The cameras record not just license plates but a full "Vehicle Fingerprint" extracted through machine learning: make, model, color, and body type; the issuing state for the license plate; whether the plate is standard, temporary, or missing; damage or modifications like broken taillights or customized rims; and identifiers

[3] https://www.flocksafety.com/products/national-lpr-network [https://perma.cc/SM5J-3ABT].

like trailers, racks, decals, window stickers, and accessories. *See Frequently Asked Questions*, Flock Safety (last accessed Apr. 16, 2026)[4] (listing several vehicle feature categories in response to the question, "Besides a license plate, what else do Flock Safety cameras capture?"); *License Plate Readers (LPR)*, Flock Safety (last accessed Apr. 16, 2026)[5] (advertising that "Vehicle Fingerprint" search function enables natural language searches such as "red pickup with a dog in the bed" even if the plate is not available).

Flock's systems leverage this data to facilitate and automate the generation of suspicion—often erroneously, as discussed below. First, Flock's "hotlist" function automatically alerts police when its system reads (or misreads) a plate as matching a plate listed as stolen or suspicious in law enforcement databases.[6] Second, vehicle data can be leveraged to uncover individuals' movements and associations: Flock has piloted a tool to link vehicles to specific individuals—registered owners and others associated with them—using open-source, commercially available, and even

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[4] https://www.flocksafety.com/faq [https://perma.cc/K58V-W77Y].
[5] https://www.flocksafety.com/products/lpr-cameras [https://perma.cc/82CV-XD87].
[6] Flock provides law enforcement customers access to a hotlist that integrates data from the National Crime Information Center, FBI National Hotlist, National Center for Missing and Exploited Children, and statewide databases. *National LPR Network*, Flock Safety, *supra*.

hacked or leaked data. Joseph Cox, *Company Flock Is Building a Massive People Lookup Tool, Leak Shows*, 404MEDIA (May 14, 2025).[7]

Such a staggering volume of vehicle and plate captures necessarily means that the vehicles captured by Flock cameras, and the people associated with them, are overwhelmingly unconnected to any crime. The massive number of vehicle images creates a comprehensive, retroactively searchable trove of information about a locality's driving population, the vast majority of whom have no actual or suspected links to criminal activity. Such data can be and has been used to target people, not for suspected crimes, but for protected First Amendment activity: one recent investigation by the Electronic Frontier Foundation, which examined Flock searches by 3,900 agencies from December 2024 to October 2025, found "hundreds of searches related to political demonstrations" and repeated targeting of activist

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[7] https://www.404media.co/license-plate-reader-company-flock-is-building-a-massive-people-lookup-tool-leak-shows/. Development of this tool contradicted Flock's claims that it does not collect "identity or personal data" and "cannot be queried to find people." *Automated License Plate Readers and the Fourth Amendment: A Public-Safety-by-Design Perspective from Flock*, Flock Safety (Nov. 11, 2025), https://www.flocksafety.com/blog/automated-license-plate-readers-and-the-fourth-amendment-a-public-safety-by-design-perspective-from-flock [https://perma.cc/QAJ9-555D]. After public backlash in the wake of this reporting, Flock issued a statement claiming that this tool would no longer "supply any data purchased from known data breaches or stolen data." *Correcting the Record: Flock Nova Will Not Supply Dark Web Data*, Flock Safety (May 30, 2025), https://www.flocksafety.com/blog/correcting-the-record-flock-nova-will-not-supply-dark-web-data [https://perma.cc/H4G7-ARQ4].

groups. Sarah Hamid, *EFF's Investigations Expose Flock Safety's Surveillance Abuses: 2025 in Review*, ELECTRONIC FRONTIER FOUND. (Dec. 30, 2025).[8]

Even setting aside total plate scans and considering only search results and hotlist alerts, the available data on Flock's efficacy suggests that these overwhelmingly point to innocuous vehicles and innocent people. While few agencies that use Flock disclose data on the outcomes of Flock searches and hotlist alerts, one study on the Piedmont Police Department, which does track outcomes, found that *99.7 percent* of ALPR hits from search results and alerts failed to yield investigative leads. Jonathan Hofer, *Efficacy of Automated License Plate Reader Hits in Piedmont, California*, INDEP. INST. 21 (Aug. 3, 2022)[9] (evaluating six years of Flock plate hits from 2013 to 2019). Yet, as discussed below, law enforcement nonetheless relies on such alerts and search results to detain and prosecute people—sometimes without first confirming or corroborating the ALPR data, and while ignoring exculpatory information.

Far from being a targeted and limited source of location data primarily used to find vehicles linked to crimes, Flock's ALPRs constitute a sweeping surveillance

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[8] https://www.eff.org/deeplinks/2025/12/effs-investigations-expose-flock-safetys-surveillance-abuses-2025-review [https://perma.cc/XAZ6-YDG3].
[9] https://www.independent.org/wp-content/uploads/article/2021/11/2021_11_30_alpr.pdf [https://perma.cc/KY58-W6KJ].

system that mostly collects and exposes innocent people's location information, increasing their risk of unjustified police contact, detention, and prosecution.

2. In numerous known cases, ALPR systems have triggered unjustified and unconstitutional stops of innocent people.

The consequences of this mass collection of location data in the absence of prior suspicion are clear: ALPR systems, and Flock in particular, have already led to documented detentions and prosecutions of innocent people. ALPR systems have misread plates, erroneously matching them to plates listed as stolen or suspicious in law enforcement databases; other times, database information was incorrect or outdated; and in still other cases, law enforcement used ALPR searches to find vehicles near a crime scene, but took no steps to corroborate their suspicions or investigate alibi evidence before initiating a prosecution.

First, plate misreads have resulted in wrongful detentions and lasting harm. Police in Toledo, Ohio, for instance, pulled over Brandon Upchurch in 2024 based on a Flock alert for a suspected stolen vehicle. Nicole Einbinder, *'Flock Flocked up': How a license plate camera misread unraveled one man's life.*, BUSINESS INSIDER (Mar. 9, 2026).[10] An officer deployed a police dog at Upchurch as he was exiting his truck, leaving him with "serious [dog bite] injuries to his arm." *Id.* But shortly after

[10] https://www.businessinsider.com/flock-safety-alpr-cameras-misreads-2026-3 [https://perma.cc/H658-4WBA].

handcuffing him, officers determined that Flock had misread his plate and confirmed he was his vehicle's registered owner. *Id.* Upchurch was nonetheless charged with resisting arrest—charges that were later dismissed—and the dog bite injuries prevented him from continuing to work as a forklift driver, costing him his job and then his home when he could no longer make rent. *Id.*

Upchurch is hardly alone; unjustified stops from plate misreads have been happening for years. *See, e.g.*, *id.* (documenting several wrongful stops where Flock misread plates); Lauren Fichten & Alex Clark, *When license plate readers get it wrong*, CBS NEWS (July 24, 2025)[11] (documenting "more than a dozen instances" of wrongful stops involving ALPR systems, including a case where police handcuffed a twelve-year-old passenger after an ALPR misread one digit on a car's plate). Denise Green, for instance, was subjected in 2009 to a "high-risk" or "felony" stop, in which multiple officers surrounded her at gunpoint, after an officer's vehicle-mounted ALPR camera mistakenly flagged her vehicle as stolen after misreading a "3" on her plate as a "7." *Green v. City & Cnty. of San Francisco*, 751 F.3d 1039, 1042–43 (9th Cir. 2014). In contravention of police department policy, none of the officers involved confirmed that her plate matched the stolen plate before stopping her. *Id.* The Ninth Circuit, noting the "known flaws in the system," reasoned that an

[11] https://www.cbsnews.com/news/license-plate-readers-alpr-mistakes/ [https://perma.cc/26GK-3ASV].

unconfirmed ALPR hit could not support reasonable suspicion and ultimately denied summary judgment for the officers. *Id.* at 1042, 1052–53.

Second, outdated database information has also prompted flawed stops. For instance, police in Jackson Township, Ohio, detained Michael Smith after a Flock alert flagged his plate as possibly connected with an investigation over a missing juvenile. *Smith v. Flock Safety*, No. 5:23-CV-2198, 2024 WL 1619544, at *2 (N.D. Ohio Apr. 15, 2024). But that investigation was no longer active: Cleveland Police Department had already found the juvenile at a local hospital, yet had failed to remove Smith's plate from the database when they closed the case. *Id.* Jackson Township police did not verify before detaining Smith that the investigation was still active or that his plate was properly included in the database. *Id.*; *see also* Einbinder, *supra* (documenting mistaken detention of grandparents and their three-year-old granddaughter where Flock misread their plate and "matched" it to stolen vehicle, but vehicle reported stolen had been found).

Third, data from a Flock ALPR search can lead and has led police to seek prosecutions based on nothing more than mere presence near a crime scene—which is insufficient to support a temporary detention or a search, let alone a prosecution. *See, e.g.*, *Milla v. Brown*, 109 F.4th 222, 230 (4th Cir. 2024) (quoting *United States v. Foster*, 824 F.3d 84, 92 (4th Cir. 2016)) ("Mere proximity to a suspected crime 'falls far short of supplying the officers with reasonable suspicion.'"). Recently, an

officer in Columbine Valley, Colorado, obtained a summons to prosecute Christiana Elser for theft based on Flock footage placing her vehicle near the site of a package theft, coupled with doorbell video purporting to show someone who generally resembled her. Olivia Prentzel, *After police used Flock cameras to accuse a Denver woman of theft, she had to prove her own innocence*, COLO. SUN (Oct. 28, 2025).[12] Elser had in fact driven through that area, but for an appointment with her tailor, and had evidence of innocence in the form of GPS data and dashboard video from her truck—but the officer refused to review it. *Id.*

These incidents are almost certainly just the tip of the iceberg. The sheer volume of information Flock cameras collect—more than twenty billion plate captures each month—means that even if such errors are a comparatively small fraction of total plate captures, that can translate into unconstitutional detentions and wrongful prosecutions of thousands of people and erode the presumption of innocence for entire communities.

B. Detentions, arrests, and prosecutions of innocent people result in part because ALPR computer vision models can be unreliable and database information can be error-prone or outdated.

As these cases show, one major reason Flock and other ALPR systems expose innocent people to unjust detention and prosecution is that the cameras often misread

[12] https://coloradosun.com/2025/10/28/flock-camera-police-colorado-columbine-valley/ [https://perma.cc/W28G-GQAN].

plates. ALPR systems employ computer vision models that are by no means foolproof but rather vary substantially in the accuracy with which they recognize characters on license plates. *See, e.g.*, Muhammad Murtaza Khan et al., *License Plate Recognition Models Employing Neural Networks*, 11 IEEE ACCESS 73613, 73623–24 (2023) (surveying several license plate recognition models and finding that, while some models were largely accurate at recognizing characters, at least in ideal conditions, others misread more than one in ten plates on average).

Moreover, common environmental conditions like low light and weather, as well as dirty or tilted plates, can impair license plate reader accuracy. *See, e.g.*, Xuanhong Wang et al., *License plate recognition system for complex scenarios based on improved YOLOv5s and LPRNet*, NATURE SCI. REPORTS 15:34741, 1–2 (2025) (noting that "traditional LPR systems perform poorly" under "conditions of image blur, low contrast, and background interference," and that "in real-world traffic environments, the performance of license plate detection and recognition is often affected by adverse weather and plate tilt"); *see also* Green, 751 F.3d at 1042 (noting that late hour and dark lighting conditions "rendered the ALPR photograph blurry and illegible" to reviewing officer).

The limited evidence available for Flock suggests that its cameras may misread plates quite often. The company claims accuracy rates "in the high 90 percentiles range." Einbinder, *supra* (quoting Flock spokesperson). But one 2021

study by a private security research firm, Internet Protocol Video Market (IPVM), found that Flock's "Falcon" ALPR cameras' outputs had a 10% error rate. *See* Parker O'Brien, *Saranac Lake halts controversial police cam installation*, ADIRONDACK DAILY ENTERPRISE (Feb. 28, 2026)[13] (reporting that one town halted planned installation of Flock ALPRs because of residents' opposition and village board members' concerns about unreliability, and noting that Flock "stopped selling its products to IPVM for testing" after the 2021 findings). Despite Flock's claims that IPVM's findings were flawed, its own representatives have acknowledged this error rate in presentations to local governments. *See, e.g.*, *Automated License Plate Readers (ALPRs)*, Proc. of the City Council of the City of Coralville, Johnson Cnty., Iowa (Sept. 23, 2025) (statement of Flock Representative Kameron Simmons)[14] (asserting in response to councilmember's question that Flock's "license plate recognition is about 90%").

Camera misreads would expose innocent people to wrongful detention and prosecution even if police always entered plate information correctly when running searches or hotlisting vehicles, but in practice, database information is often

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[13] https://www.dailygazette.com/ade/news/local_news/saranac-lake-halts-controversial-police-cam-installation/article_14297d4f-148d-59fc-8417-b7e7a4a43939.html [https://perma.cc/D27T-3A9B].

[14] https://www.coralville.org/AgendaCenter/ViewFile/Minutes/_09232025-1908 [https://perma.cc/X9HY-3CY5].

incorrect or outdated. *See, e.g.*, *Smith*, 2024 WL 1619544, at *2; Charlie Warzel, *When License-Plate Surveillance Goes Horribly Wrong*, N.Y. TIMES (Apr. 23, 2019)[15] (documenting wrongful detention of Brian Hofer when ALPR flagged his rental car as stolen, though car had been recovered after being stolen earlier that year). With little or no oversight to ensure that database records are both entered accurately at their inception and kept up to date, such errors can proliferate.

C. Faulty ALPR data can compound with cognitive bias, resulting in the wrongful detention and even incarceration of innocent individuals.

Unconscious cognitive bias among police investigators can compound the inaccuracy and messiness of ALPR data. Recent reporting has revealed numerous cases, including some of those discussed above, where police targeted individuals identified through ALPR data despite demonstrable evidence of their innocence, and relied on ALPR "hits" to forcibly detain motorists when even a cursory review of the car's license plate would have shown the hit to be mistaken.

Cognitive bias is a well-documented phenomenon both in human cognition generally and in police investigations specifically. *See, e.g.*, Itiel E. Dror, *Biased and Biasing: The Hidden Bias Cascade and Bias Snowball Effects*, 15 BEHAV. SCI. 490 (2025). Rather than reflecting intentional bias or prejudice, cognitive bias is "an

[15] https://www.nytimes.com/2019/04/23/opinion/when-license-plate-surveillance-goes-horribly-wrong.html.

outcome, a by-product, of people's cognitive architecture and of how the brain processes information." *Id.* at 491. In the context of policing and prosecution, cognitive bias refers to the ways that "an individual's pre-existing beliefs, expectations, motives, and situational context influence the collection, perception, and interpretation of evidence during the course of a criminal case." *Id.* (quoting Saul M. Kassin et al., *The Forensic Confirmation Bias*: *Problems, Perspectives, and Proposed Solutions*, 2 J. APPLIED RSCH. MEM. & COGNITION 42, 45 (2013)).

Two common forms of cognitive bias in the criminal legal system are "tunnel vision" and "automation bias." Both can cause law enforcement to disregard evidence of innocence. *See generally* Keith A. Findley & Michael S. Scott, *The Multiple Dimensions of Tunnel Vision in Criminal Cases*, 2006 WIS. L. REV. 291 (2006); Raja Parasuraman & Dietrich H. Manzey, *Complacency and Bias in Human Use of Automation: An Attentional Integration*, 52 HUM. FACTORS 381 (2010).

1. ALPR data can combine with police tunnel vision to result in wrongful detentions.

Tunnel vision refers to "a rigid focus on one suspect that leads investigators to seek out and favor inculpatory evidence [against that suspect], while overlooking or discounting any exculpatory evidence." Kassin et al., *supra*, at 45; *accord* Eitan Elaad, *Tunnel Vision and Confirmation Bias Among Police Investigators and Laypeople in Hypothetical Criminal Contexts*, 12 SAGE OPEN 1, 2 (Apr. 2022); Findley & Scott, *supra*, at 292. Tunnel vision does not require bad faith,

maliciousness, or indifference. Instead, it is "more often the product of the human condition as well as institutional and cultural pressures." Findley & Scott, *supra*, at 292. That tunnel vision is unintentional, however, does not make it less dangerous to innocent suspects.

Chrisanna Elser's case exemplifies how ALPR "hits" can lead to tunnel vision. Prentzel, *supra*. When an officer arrived at her door to deliver a summons for the alleged package theft, Elser offered to show him footage from her car's dashboard camera showing that she had never even been to the house in question, but the officer refused to view it. *Id.* She then spent days gathering evidence of her innocence, from dashboard camera and GPS records to surveillance video, and repeatedly called local police, trying to present her evidence. *Id.* It was not until she wrote a letter laying out the proof of her innocence that the police agreed to review the case more closely—and dropped the charges. *Id.* Had Elser been unable to retrieve evidence of her innocence, or been less persistent, she may well have faced wrongful conviction.

Detroit police similarly ignored compelling evidence of Isoke Robinson's innocence, instead relying exclusively on ALPR data. After witnesses to a drive-by shooting described the car involved as a Dodge Charger, officers looked up all the Dodge Chargers spotted near the site. Paul Egan, *She's suing after Detroit police seized her car based on license plate reader data*, DETROIT FREE PRESS (Sept. 16,

2024).[16] They then came to Robinson's house, handcuffed her, placed her two-year-old son (who has autism spectrum disorder) in the back of a patrol car, and impounded her car for three weeks—all because an ALPR camera had captured her Dodge Charger, not at the shooting scene, but two miles away. *Id.* Officers also failed to check if Robinson's car actually matched the description: while the car at the shooting was missing its fog lights, hers were intact. *Id.*

When investigators lock onto a suspect identified via an ALPR hit, tunnel vision can lead them to ignore alternate leads, disregard exculpatory evidence, and overweight evidence that appears to confirm the suspect's guilt. For Elser, this meant she had to spend days gathering evidence to prove her innocence. For Robinson, it meant a frightening encounter and losing her car for three weeks, until police finally did their due diligence. For other innocent people who lack easy access to clear proof of their innocence, it could mean pretrial incarceration, substantial attorney's fees, and even wrongful conviction.

2. ALPR data can combine with automation bias to result in wrongful detentions.

Police using ALPR data can also be susceptible to automation bias, which refers to the human tendency to "over-rely on automation." Kate Goddard et al.,

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[16] https://www.freep.com/story/news/local/michigan/detroit/2024/09/16/detroit-police-license-plate-readers-isoke-robinson-car-shooting/75189126007/ [https://perma.cc/K554-3XS9].

Automation Bias: A Systematic Review of Frequency, Effect Mediators, and Mitigators, 19 J. AM. MED. INFORM. ASSOC. 121, 121 (2011). Automation bias tends to produce "decisions that are not based on a thorough analysis of all available information but that are strongly biased by the automatically generated advice." Parasuraman & Manzey, *supra*, at 391.

Decades of controlled studies across domains as varied as aviation, medicine, and military command have established that humans systematically over-rely on computer-generated outputs—even when those outputs are demonstrably wrong. *Id.* at 392–95. Automation bias can persist even when lives are at stake: one study found, for instance, that the detection rate for cancers dropped from 68% when mammogram reviewers were unaided by technology to 52% when an automated aid failed to perform its intended function. E. Alberdi et al., *Effects of Incorrect Computer-Aided Detection (CAD) Output on Human Decision-Making in Mammography*, 11 ACAD. RADIOLOGY 909, 914–15 (2004).

Automation bias has been known to lead to both errors of omission, where the user fails to notice problems because the machine does not alert them, and errors of commission, where users follow automated recommendations that are incorrect. Parasuraman & Manzey, *supra*, at 392. In the context of ALPR searches and alerts, omission errors occur when investigators fail to notice the data's limitations, and commission errors occur when investigators act on hits that are wrong or misleading.

Police officers' blind reliance on faulty ALPR data has resulted in numerous known wrongful detentions. For instance, in Denise Green's case, discussed above, San Francisco police pulled Green over, pointed guns at her, and handcuffed her, all because an ALPR misread a "3" as a "7" on her license plate and flagged it as stolen. Joshua Sabatini, *City set to approve wrongful arrest suit settlement*, S.F. EXAMINER (Sept. 7, 2015).[17] Officers could have verified her plate number to confirm it matched the alert before stopping her, but did not; they only let her go upon finally checking her plate twenty minutes *after* detaining her. *Id.* Similarly, Colorado police relied on an ALPR hit for a stolen car when they pulled over Brittany Gilliam. Colleen Slevin, *Family of Black girls handcuffed by Colorado police, held at gunpoint reach $1.9 million settlement*, ASSOCIATED PRESS (Feb. 5, 2024).[18] Officers ordered Gilliam and her family, including her daughter, sister, and nieces, out of the car at gunpoint and handcuffed them all. *Id.* Only after detaining them did officers notice that the ALPR alert was for a motorcycle with Montana license plates, while Gilliam was driving an SUV with Colorado plates. *Id.*

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[17] https://www.sfexaminer.com/news/city-set-to-approve-wrongful-arrest-suit-settlement/article_2606ea3a-bd84-56b1-be3f-e6d608c397ca.html [https://perma.cc/PU38-N73B].

[18] https://apnews.com/article/handcuffed-black-girls-colorado-settlement-a7a695839b8841e56b7db0d103cc5ed1 [https://perma.cc/K6EX-WKBV].

ALPR data can feed into police tunnel vision and automation bias, resulting in officers uncritically relying on ALPRs to identify suspects without considering the limitations and potential inaccuracy of this data. Wrongful detention and even incarceration of innocent people can follow. When combined with the racial and economic disparities in where ALPRs are located, discussed below, this can effectively cast a pall of suspicion over whole neighborhoods, resulting in a diminished presumption of innocence for all residents in certain communities.

II. Norfolk's Flock Cameras Disproportionately Diminish Constitutional Protections and Erode the Presumption of Innocence in the Communities of Color Where They Are Most Concentrated.

A. Norfolk's Flock cameras disproportionately target majority-Black areas.

During discovery in this case, Magistrate Judge Leonard unsealed data on the locations of Flock cameras in the Hampton Roads region, including the City of Norfolk. *See* Steven T. Keener, John Finn & Andrew F. Baird, *Surveillance Inequality: Race, Poverty, and the Geography of Automated License Plate Reader Deployment* 3 (2026) (preprint).[19] Academic researchers subsequently performed a statistical analysis of the geographical data, revealing the inequality entrenched in where cameras are deployed. *Id.* at 5. Employing geographics information systems (GIS) and spatial analysis, the researchers exposed links between the concentration

[19] https://osf.io/preprints/socarxiv/5ckgv_v1.

of Flock cameras in specific census tracts and the demographics of those same tracts. *Id*. at 15. Their analysis of the geographic spread of this surveillance reveals a "profound disproportionality in terms of race and poverty status." *Id*.

Across the Hampton Roads region, majority-Black neighborhoods are disproportionately targeted in terms of both breadth and density of ALPR surveillance. In Norfolk, majority-Black neighborhoods are far more likely to have at least one Flock camera than majority-white neighborhoods.[20] *Id*. at 20. Black residents also experience the presence of cameras much more intensely, as additional analysis of the density of the cameras shows that "majority Black and heavily segregated Black census tracts consistently contain a disproportionate share of Flock cameras relative to their population share." *Id*. at 25.

The data also show that poor Virginians are disproportionately targeted, with a higher population-weighted density of cameras in high-poverty neighborhoods in Norfolk and across the Hampton Roads region. *Id*. at 27. This mirrors trends in other cities where low-income neighborhoods, including public housing communities, bear a far greater burden of surveillance. A Washington Post investigation of Steubenville, Ohio, revealed that, due to higher density of surveillance cameras, "public housing residents—who are nearly three times more likely to be Black than

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[20] Percent of white majority tracts with at least one Flock camera: 51.52%; percent of Black majority tracts with at least one Flock camera: 72.00%. *Id*. at 20.

other Steubenville residents, census records show—are about 25 times more likely to have their daily lives observed by government-controlled cameras." Douglas MacMillan, *Eyes on the Poor: Cameras, Facial Recognition Watch Over Public Housing*, WASH. POST (May 16, 2023).[21]

Norfolk encompasses nine of the ten census tracts with the highest number of Flock cameras across the Hampton Roads region. Keener et al., *supra*, at 28. Within the city, the geographical placement of Flock cameras tracks the history of race-based redlining policies that segregated the city by excluding Black people from certain neighborhoods. *Mapping Inequality: Redlining in New Deal America*, U. RICHMOND (last accessed Apr. 16, 2026).[22] Huntersville, a formerly redlined community, lies within the census tract that has the second-highest number of Flock cameras in the region. Keener et al., *supra*, at 29. Within the Greater Norfolk area, "over 60% of all cameras are either within or immediately adjacent to historically redlined areas." *Id.* at 30.

This pattern of disproportionate surveillance is not unique to Norfolk or to Flock cameras, but rather exemplary of a broader trend stemming from police departments relying on skewed data that reflects historically disproportionate levels

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[21] https://www.washingtonpost.com/business/2023/05/16/surveillance-cameras-public-housing.

[22] https://dsl.richmond.edu/panorama/redlining/map/VA/Norfolk/context#loc=10/37.0026/-76.3938.

of policing to inform which neighborhoods to surveil today. *See generally* Wendy Lee et al., *Garbage In, Gospel Out: How Data-Driven Policing Technologies Entrench Historic Racism and 'Tech-Wash' Bias in the Criminal Legal System*, NAT'L ASSOC. CRIM. DEF. LAWYERS 45–48 (2021). A designation of a neighborhood as "high crime" can result just as much from the intensity of police presence, and correspondingly inflated arrest rates for minor or "quality of life" offenses, as from actual incidence of crime. *See id.* at 27. When the ACLU of Oklahoma analyzed Tulsa's use of Flock cameras, for instance, it found that "cameras are placed exclusively in majority Black and Hispanic neighborhoods with none in the wealthy and white midtown neighborhoods." *The Threat to Privacy and Civil Liberties with Automatic License Plate Readers*, ACLU OKLA. (Dec. 21, 2023).[23] In New York City, similarly, Amnesty International collected data that showed that, in Brooklyn, Queens, and the Bronx, surveillance cameras are more highly concentrated in areas with a higher proportion of non-white residents. *Inside the NYPD's Surveillance Machine*, AMNESTY INT'L (last accessed Apr. 16, 2026).[24]

Given the risk of unjustified stops based on Flock ALPR data, as outlined above in Section I, the uneven geographic spread of these cameras subjects Black

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[23] https://www.acluok.org/news/threat-privacy-and-civil-liberties-automatic-license-plate-readers [https://perma.cc/KT83-73NL].
[24] https://banthescan.amnesty.org/decode/index.html [https://perma.cc/7XW8-XT63].

communities in Norfolk to a higher likelihood of unwarranted police scrutiny. Moreover, Flock cameras do not operate within a silo but rather constitute one piece of a broader surveillance infrastructure. The Norfolk Police Department centralizes data from its entire arsenal of surveillance technologies, including Flock cameras, into its Real Time Crime Center. JA230–232 (listing sources of Norfolk's Real Time Crime Center footage in response to interrogatory). With so many types of information all readily accessible to police in one place, this centralization corrodes the presumption of innocence and concentrates the risk of unjustified police intrusion within the most heavily surveilled neighborhoods, especially when the systems disproportionately targeting communities of color include not just Flock but also other, even less reliable technology. A Wired investigation into leaked data on gunshot detection microphones sold by ShotSpotter (now known as SoundThinking) revealed disproportionate deployment of the microphones in low-income, Black, and Latino neighborhoods. Dhruv Mehrotra & Joey Scott, *Here Are the Secret Locations of ShotSpotter Gunfire Sensors*, WIRED (Feb. 22, 2024).[25] Yet, like Flock cameras, ShotSpotter microphones rarely produce actionable leads.[26] When law enforcement

[25] https://www.wired.com/story/shotspotter-secret-sensor-locations-leak/.

[26] According to an analysis of data from New York City, "over 99% of ShotSpotter's alerts did not lead to the recovery of guns or identification of those involved in gun violence." *Confirmed: ShotSpotter Technology Increases Surveillance and Policing of Black and Latine New Yorkers, While Failing to Reduce Gun Violence*, BROOKLYN

relies on flawed surveillance technologies and geographically concentrates those technologies based on biased historical data, the resulting dragnet creates a disproportionate risk of unjustified detentions, searches, and arrests in communities of color based merely on their saturation with unreliable technology.

B. Over-surveillance of low-income and majority-Black communities creates a two-tiered system of constitutional protection, subjecting targeted communities to a diminished right to privacy and presumption of innocence.

The breadth and density of surveillance in majority-Black areas of Norfolk erodes Fourth Amendment rights for residents and visitors of those neighborhoods. People of color are more likely to suffer intrusions of their privacy and unreasonable searches and seizures, in effect receiving a diminished presumption of innocence. This two-tiered system of constitutional protection is especially alarming considering the shortcomings of Flock cameras outlined above in Section I.

Supreme Court precedent clearly establishes that the Fourth Amendment's guarantee of protection against unreasonable searches and seizures applies in the modern age to "a person's expectation of privacy in his physical location and movements." *Carpenter v. United States*, 585 U.S. 296, 304–08 (2018); *see also United States v. Jones*, 565 U.S. 400, 415 (2012); U.S. Const. amend. IV. This circuit

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DEFENDER SERVS. (Dec. 2024), https://bds.org/assets/files/Brooklyn-Defenders-ShotSpotter-Report.pdf [https://perma.cc/EC5F-4PC8]. .

extended the concept to aerial surveillance in *Leaders of a Beautiful Struggle v. Baltimore Police Department*, which held that the warrantless operation of Baltimore's aerial surveillance program violated the Fourth Amendment because the program enabled police "to deduce from the whole of individuals' movements" and therefore constituted a search under *Carpenter*. 2 F.4th 330, 346 (4th Cir. 2021). That conclusion rested on the fact that, "because people's movements are so unique and habitual, it is almost always possible to identify people by observing even just a few points of their location history." *Id.* at 343.

The same logic dictates that Norfolk's Flock camera surveillance amounts to a Fourth Amendment violation. Intimate and sensitive details about an individual's movements that can be deduced from the data collected by Flock cameras, to which the Norfolk Police Department has almost unfettered access. *See* JA365 (Norfolk Police Department "special order" authorizing patrol officers to use Flock for "law enforcement purposes" with minimal guidance on what constitutes appropriate law enforcement purposes).

The statistical analysis above demonstrates that this violation is broader and more intense in communities of color. Until the program is struck down, residents of Black communities in Norfolk will endure a diminished presumption of innocence and be subjected to more frequent government intrusions compared to residents of

majority-white neighborhoods, implicating Equal Protection principles. *See* U.S. Const. amend. XIV § 1.

The concentration of Flock's cameras in majority-Black census tracts mimics previous patterns of racialized surveillance, some of which courts have held unconstitutional. A district judge in the Southern District of New York held that the New York City Police Department's racially discriminatory stop-and-frisk policy violated New Yorkers' Fourth and Fourteenth Amendment rights. *Floyd v. City of New York*, 959 F.Supp.2d 540, 658, 660 (S.D.N.Y. 2013). In the landmark ruling, the court pointed to the higher rates of police stops of Black and Latino New Yorkers *and* the lack of resulting arrests, summonses, or recovery of weapons or contraband from those stops. *Id.* at 589. It found based on expert analysis and statistical data that "blacks are likely targeted for stops based on a lesser degree of objectively founded suspicion than whites." *Id.* The rationale underlying *Floyd* applies to Norfolk's Flock system given the disproportionate geographical spread of the cameras, which similarly will result in disproportionate levels of unjustified government intrusion in communities of color.

When police concentrate multiple unreliable surveillance technologies in communities of color and rely on these technologies to generate suspicion, they subject those communities to a heightened risk of unjustified detentions and arrests—and ultimately a heightened risk of wrongful conviction. Researchers have

termed this cumulative burden "surveillance load." Sarah P. Chu et al., *Surveillance Load: A Burden of Search Borne by Black and Brown Bodies*, 31 CRITICAL CRIMINOLOGY 451, 454 (2023). Under the current surveillance landscape, residents of higher-income, majority-white neighborhoods continue to benefit from the right to privacy and presumption of innocence guaranteed by the Constitution, while communities of color "experience the Fourth Amendment as a system of surveillance, social control, and violence, not as a constitutional boundary that protects them from unreasonable searches and seizures." Devon W. Carbado, *From Stopping Black People to Killing Black People: The Fourth Amendment Pathways to Police Violence*, 105 CALIF. L. REV. 125, 130 (2017).

Disparate surveillance loads risk perpetuating and exacerbating the already disproportionate risk of wrongful conviction for people of color. A 2022 report by the National Registry of Exonerations, surveying the Registry's database of known wrongful convictions in the United States since 1989, found that Black people accounted for 53% of the 3,200 exonerations documented at the time, despite comprising just 13.6% of the country's population. Samuel R. Gross et al., *Race and Wrongful Convictions in the United States*, NAT'L REGISTRY OF EXONERATIONS 1 (2022).[27] Innocent Black people are more than seven times as likely as innocent

[27]https://www.law.umich.edu/special/exoneration/Documents/Race%20Report%20Preview.pdf.

white people to be wrongly convicted of murder, roughly eight times as likely to be wrongly convicted of sexual assault, and fully nineteen times as likely to be wrongly convicted of drug offenses. *Id.* at 3–4, 18, 45. Policing practices have contributed to these disparities: because anyone subjected to a search during a traffic or street stop "is at risk of false arrest and possibly false conviction[, t]he issue is who police choose to search." *Id.* at 34. Outsourcing that decision to error-prone surveillance tools concentrated in communities of color only layers a technological gloss over existing disparities—and risks deepening them.

The en banc opinion in *Leaders of a Beautiful Struggle* highlighted the "vital constitutional function" of protecting disadvantaged communities from unjustified government intrusion, stressing that "[b]ecause those communities are over-surveilled, they tend to be over-policed, resulting in inflated arrest rates and increased exposure to incidents of police violence." *Leaders of a Beautiful Struggle*, 2 F.4th at 347. By finding in favor of Appellants and striking down Norfolk's Flock camera surveillance, this Court can and should reaffirm a central principle of that opinion: that the "Fourth Amendment must remain a bastion of liberty in a digitizing world." *Id*. at 348.

CONCLUSION

For these reasons, amici respectfully urge this Court to find in favor of Appellants.

Respectfully submitted,

/s/ Matthew A. Wasserman
Matthew A. Wasserman
The Innocence Project
40 Worth Street, Suite 701
New York, NY 10013
(212) 364-5340
mwasserman@innocenceproject.org

Nina P. Loshkajian (NY Bar No. 5947825)
Center on Race, Inequality, and the Law
New York University School of Law
139 MacDougal Street, 4th Floor
New York, NY 10012
(212) 992-6288
nl1476@nyu.edu

CERTIFICATE OF COMPLIANCE UNDER RULE 32(G)(1)

This brief complies with the type-volume limit of Federal Rule of Appellate Procedure 29(a)(5) because, excluding the parts of the document exempted by Rule 32(f), it contains 6,492 words. This brief complies with the type-style requirements of Rule 32(a)(5) and Rule 32(a)(6) because it was prepared using Microsoft Word 365 in 14-point Times New Roman, a proportionally spaced Serif typeface.

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/s/ Matthew A. Wasserman
Matthew A. Wasserman
Counsel for Amici

CERTIFICATE OF SERVICE

On April 20, 2026, this brief was served via CM/ECF on all registered counsel and was transmitted to the Clerk of the Court. Amicus also served this brief by electronic mail on the following:

INSTITUTE FOR JUSTICE
Michael B. Soyfer
Robert Frommer
901 North Glebe Road, Suite 900
Arlington, Virginia 22203
msofyer@ij.org
rfrommer@ij.org

Counsel for Plaintiffs-Appellants

MUNGER, TOLLES & OLSON LLP
Elaine Goldenberg
Daniel J. Kane
601 Massachusetts Ave. NW,
Suite 500E
Washington, DC 20001
elaine.goldenberg@mto.com
daniel.kane@mto.com

Counsel for Defendants-Appellees