Decode Surveillance NYC

ORGANISATION
Amnesty International

LOCATION
USA, with volunteers around the world

INNOVATION SPECTRUM
Data lakes

MATURITY LEVEL
Established

International
Civil Society Centre

The organisation

Amnesty International is a human rights movement of more than 10 million people worldwide. Its Crisis Evidence Lab is a multidisciplinary team that collaborates with researchers and campaigners across the movement to apply digital tools and techniques to human rights work. The Lab's work spans areas such as open source research, remote sensing, weapons analysis, data science and machine learning.

The big idea behind Amnesty Decoders

Amnesty Decoders combines citizen science and data science, people and automation. At the core of the project is the promise that digital volunteers with little or no training can help solve large and often complex research questions in human rights. This is achieved through micro-tasking: breaking down monumental challenges, such as the analysis of a large archive of handwritten reports, into many thousands of small assignments that can be completed by volunteers online.

Established five years ago, Amnesty Decoders' goal is to use this people-powered approach to tackle the issue of "missing datasets" in human rights work. Missing datasets, a term coined by Nigerian-American artist Mimi Onuoha, are blank spots that exist in spaces that are otherwise data-saturated.[1] Too often, these datasets don't exist because "those who have the resources to collect data lack the incentive to" or those in a position to self-report perceive little benefit in doing so.[2] Research tells us that minoritised groups are disproportionately affected by the resulting knowledge gaps.[3]

Decoders has successfully generated and structured multiple missing datasets. The first project saw 28,000 digital volunteers responding to the crisis in Darfur by mapping remote villages and identifying when attacks had occurred. The approach has since generated data about airstrikes in Syria, online abuse against women, and oil spills in Nigeria.

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[1] Ọnụọha, M., (2016) 'The Library of Missing Datasets' mimionuoha.com/the-library-of-missing-datasets

[2] Ọnụọha, M., (2018) 'On Missing Datasets' github.com/MimiOnuoha/missing-datasets#readme

[3] D'Ignazio, C., & Klein, L. (2020) 'Introduction: Why Data Science Needs Feminism' in 'Data Feminism' https://data-feminism.mitpress.mit.edu/pub/frfa9szd

The big idea behind Decode Surveillance NYC

In the most recent project of Decoders, Decode Surveillance NYC, volunteers analysed images to identify and categorise surveillance cameras in New York City (NYC), to complete the first ever citywide map of these cameras. The crowdsourcing effort and research findings fed into Amnesty International's global Ban the Scan campaign against the use of facial recognition technology (FRT) by government agencies.

Critically, Decoders does not stop with the acquisition of data. For Decode Surveillance NYC, the project team collaborated with data scientists, subject experts, developers and designers to produce research findings and share these with different audiences from NYC council members to communities impacted by FRT. For the NYC chapter of the campaign, Amnesty International partnered with a coalition of more than a dozen organisations, such as Surveillance Technology Oversight Project, Office of the New York City Public Advocate, Immigrant Defence Project, and New York Civil Liberties Union.

Amnesty Decoders is an example of how coalitions, such as Ban the Scan, can leverage public information to verify and ultimately pitch the realities of marginalised groups against those touted by government agencies or powerful corporations. The project innovated crowdsourcing and open source research to challenge power asymmetries that exist between the New York Police Department (NYPD) and the people it serves. The data generated put evidence of the possible reach of FRT and its role in exacerbating discriminatory policing in the hands of New Yorkers.

The challenge and the power dynamics of the system

Past Decoders projects have combined public information with digital volunteering to take on large corporations such as Shell (Decode Oil Spills, 2017) and Twitter (Troll Patrol, 2018), and state actors such as the Government of the United States (Strike Tracker, 2018). Vast power asymmetries – between consumers and companies, citizens and governments – are the starting point for every Decoders project.

Decode Surveillance NYC was conceived at a moment when cities and governments around the world are either investing in facial recognition technology or debating whether to limit its use. Amnesty International is calling for a total ban on the use, development, production, sales and export of FRT for mass surveillance purposes by both states and the private sector. The organisation has argued that the technology threatens the rights to privacy, peaceful assembly and to be free from discrimination. Black and minority communities are at greatest risk of being misidentified. Even when accurate, facial recognition can still exacerbate discriminatory policing, and suppress the free and safe exercise of peaceful assembly.

In the USA, the NYPD has said it used facial recognition 22,000 times between 2016 and 2019; half of those cases were in 2016, suggesting an upward trend. In January 2021, the Ban the Scan coalition and Amnesty International USA asked the NYPD for information on its procurement and use of the technology. The NYPD declined this Freedom of Information Law (FOIL) request on the grounds it would be like "looking for a needle in a haystack".

Intervening in the power dynamics

Unable to track the NYPD's use of FRT, Amnesty International then shifted its focus to mapping the surveillance cameras that feed the system. Decode Surveillance NYC worked with more than 7,000 volunteers from more than 150 countries and territories to count and categorise cameras at each of 45,000 traffic intersections in New York City. The volunteers found thousands of cameras, including more than 3,000 likely belonging to government agencies such as the NYPD.

During the analysis, the crowdsourced surveillance camera data was compared with census tract data and the NYPD's own records of incidents of stop-question-and-frisk. Researchers found that people living in the boroughs i.e. The Bronx, Brooklyn and Queens in neighbourhoods with more non-white residents experienced higher levels of mass surveillance. When compared with stop-question-and-frisk locations, the Decoders data revealed that the higher the rate of stop-question-and-frisk in an area, the more publicly-owned surveillance cameras there were, and so the higher the risk of surveillance by FRT.

These findings were communicated via a web app built to meet the campaigning and advocacy needs of Ban the Scan. The app used scenarios such as attending a Black Lives Matter protest to visualise the research findings. Users could also enter a start and end point in NYC to find out where volunteers found surveillance cameras along the route and the risk of exposure to facial recognition technology.

Upon launch, Amnesty International open sourced the methodology, raw data and analysis code. Publishing transparent and reproducible findings has been integral to building trust, defending the research and allowing others such as students and researchers to independently build on the work.

" We are…leveraging crowd-sourcing and crowdsolving to disrupt really asymmetrical power dynamics. "

SOPHIE DYER, PRODUCT MANAGER,
AMNESTY DECODERS, AMNESTY INTERNATIONAL

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https://icscentre.org/resources/innovation-report

Aspects underpinning innovation

1 | **Meaningful Access**

Amnesty Decoders projects happen in four stages: designing the data structure; running the crowdsourcing; conducting the analysis; and communicating the findings. During the first stage, Amnesty International worked with a user experience (UX) designer and web development team to ensure that the crowdsourcing website was mobile friendly, quick to load and did not require the latest operating system.

This approach digitised the methodology to map surveillance cameras in NYC - compared to the physical walking surveys used in past projects - by using Google Street View, so it could be accessed by anyone with an internet connection and the time to volunteer. The time commitment asked of volunteers was flexible. Microtasks are quick to complete, meaning even people with only a few minutes to spare could still participate.

To successfully onboard a diverse cohort of volunteers with little or no subject knowledge, Amnesty International developed a tutorial video, visual Help Guide and worked with an illustrator to create pictograms for the crowdsourcing website to reinforce instructions, and as visual aids for volunteers who were not fluent in English or would otherwise benefit.

Alongside internet access, language may be the largest barrier to participation. To ensure as safe an online space as possible, Amnesty International moderates Decoders forums in the relevant project languages, along with translating the website materials, but delivering Decoders in multiple languages is complex. As a result, except for [Troll Patrol India](#), the crowdsourcing stage of the project is usually in English.

2

Tools

Amnesty Decoders is powered by [Hive](#), an open-source platform developed by the New York Times and the open source discussion platform, [Discourse](#). Identifying new data streams is an important part of the project brief. Decode Surveillance NYC used image panoramas served to the project crowdsourcing website by the Google Street View API (Application Programming Interface). Google Street View was chosen over other platforms because of its extensive geographical coverage and relatively up-to-date imagery.

New York has more than 45,000 road intersections, and each was assessed by three digital volunteers. They analysed Street View panoramas to find and classify surveillance cameras. The volunteers were asked simple multiple choice questions such as, "What is the camera attached to?"

> 1. streetlight, traffic signal or roadside pole
> 2. building
> 3. something else

If they selected "1. streetlight, traffic signal or pole", they were asked to select the camera type by choosing

> 1. dome or pan, tilt, zoom (PTZ)
> 2. bullet or
> 3. unknown.

Cameras attached to streetlights or traffic signals or other roadside poles were assessed by Amnesty International as being more likely to be owned by a government agency, with the access to install and maintain them.

In the results, the median camera number/type was used. The team arrived at this relatively simple calculation after working closely with data scientists to test the reliability of the data. In other words, how often do volunteers agree on the number and type of camera? How accurate are they?

In the absence of technical specifications for the NYPD-owned Argus cameras, Amnesty International used 3D modelling and commercial catalogues to calculate the camera's likely field of view. In addition, experts such as geographers, statisticians, and the open data organisation [Beta NYC](#) fed into the project findings.

3 | **Skills and Learning Communities**

Past internal evaluations have shown that Decoders volunteers are motivated by altruism and hugely supportive of each other. Peer-to-peer support and learning via a moderated forum makes Decoders possible, enabling thousands of volunteers to communicate and collaborate around a common task.

In Decode Surveillance NYC, volunteers used the forum to discuss hard-to-find cameras, give each other feedback, flag and learn from each other's mistakes, and share reflections and experiences of surveillance. Most forum threads were initiated by volunteers flagging an assignment for discussion. This peer-to-peer support and the volunteer moderators greatly increase the capacity of the small Amnesty International staff team behind the project. The forum creates a crucial opportunity for the staff to learn from volunteers and make adjustments while the project is live.

Decode Surveillance NYC poses questions about how to create more meaningful ways for people to participate in activism online. Beyond feedback, the forum creates something less tangible: a sense of being part of something. One forum moderator, Sofia Caferri, shared her experiences: "working together to achieve a common goal fostered connections between the Decoders. The forum required a high level of engagement. To participate fully, Decoders had to read posts, give feedback, like and share their opinions." It offers people a way to participate in real research and feel part of a larger, global community - especially important during the COVID-19 pandemic. It fostered "building community and kindness", no small feat considering the volunteers were a hugely diverse group from all over the world, ranging from students to workers with a multitude of abilities and experiences.

The forum is integral to Decoders, but maintenance and moderation is challenging for the project team and expectations around this may also be shifting. In comparison to social networks, Amnesty International has a different duty of care. All volunteers should feel equally safe and supported, and this requires clear user agreements and protocols, trained moderators and timely responses.

Impact and influence

The impact of Decode Surveillance NYC has been extensive since first announced to the public. At completion, the project statistics are staggering:

- **7,203 volunteers** took action: If every person had stood at an intersection, they would have covered an area larger than The Bronx.
- **153 countries and territories** were represented: Most volunteers came from the USA, Nigeria, Pakistan, UK and Bangladesh.
- **45,433 locations** were analysed: Volunteers analysed every intersection in New York City, excluding expressways.
- **138,835 tasks** were submitted: Each intersection was analysed at least three times.
- **3,472 work hours** were contributed: Equivalent to an Amnesty researcher working full-time for nearly two years.
- **2,534 posts** were created in the Amnesty Decoders discussion forum.

The project achieved significant media attention with headlines in publications such as Al Jazeera, Forbes, MIT Tech Review, MBC, CNBC, NPR, Vice, Wired and local news stations such as WNYC. Journalists used the web app to write about "digital walks" and even understand how historic protests, such as the 1982 March Against Nuclear Energy, would have been surveilled had they happened today.

Feedback from Ban the Scan partners has been positive, with several saying that they used the app as an advocacy and campaigning tool – alongside more than 10,500 unique visitors over six months after launch. In July 2022, the app was shortlisted for the Dutch Design Awards.

In the words of Sophie Dyer, Product Manager for Amnesty Decoders, "we sued the NYPD and we won" - in August 2022, the NYPD was ordered to hand over 2700 documents and emails related to the force's procurement and use of facial recognition technology against Black Lives Matter protesters, after the New York Supreme Court ruled in favour of Amnesty International and the Surveillance Technology Oversight Project (S.T.O.P.) on their joint FOIL-related lawsuit. Data from Decode Surveillance NYC had been submitted as evidence.

Key takeaways

From its use of digital volunteers to data science, Amnesty Decoders is an example of identifying the "right depth of tech". Even when taking into account advances in machine vision and learning, investing in working with volunteers has significant advantages. When [IPVM](#), an independent authority on video surveillance, [compared the volunteer effort to an academic study](#) that used machine learning to map surveillance cameras, it concluded that Amnesty International found significantly more cameras.

Data scientists or statisticians needed to understand the trustworthiness of the data and generate findings. This and other specialist roles such as UI or UX design need to be accounted for at the start of the project.

New digital sources are increasingly available; scoping their potential applications and associated risks - before designing the crowdsourcing - cannot be overstated.

While crowdsourcing is a powerful way to tackle large-scale research questions, it also poses risks. A critical number of volunteers must be mobilised for success and this can be challenging for smaller organisations. Amnesty International, as a movement of 10 million people, is particularly suited to the task.

The next 5+ years…

Amnesty International regularly evaluates Decoders to learn integrated lessons from past projects and review how the initiative is meeting the changing research needs of the organisation. The next five years offer opportunities both unforeseen and predictable: to date, the core methodology and values of the project have been constant while data streams and public expectations related to online spaces have evolved, raising new technical and ethical challenges.

The current lead times can be shortened and the methodology adapted to be less resource-intensive and with a greater focus on design justice and inclusion.

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