



Numina Privacy Policy

Effective Date: March 15, 2022

Numina's system was designed from the start with privacy as a foremost concern, and we take every measure to prevent the use of our technology as a surveillance tool. We minimize the data we collect and transmit, and will never deliberately collect Personally Identifiable Information (PII). This policy outlines what information our system collects, how we use it, and the steps we have taken both in the system design and in our company practices to ensure we are respecting personal privacy in every possible way.

We may update this policy as our capabilities and processes evolve.

Glossary

Edge processing: Computation performed on-site, onboard the Numina sensor.

Object Data: Inferences about a particular object observed by a Numina sensor, including the object classification (e.g. pedestrian, bicyclist), location, and time of the observation.

Detection Images: Images collected and processed on a sensor to extract object data.

Sample Images: Images collected by a sensor and transmitted to the cloud for training and validation.

Original Sample Images: Sample images in their original form. These images will never be viewed directly.

De-Identified Sample Images: Sample images with de-identification applied to remove any Personally Identifiable Information (PII).



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Personally Identifiable Information (PII): Features of a person or vehicle that allow their identity to be extracted by a human or machine with a high level of confidence.

Dashboard: The user interface hosted at dashboard.numina.co and any adjacent reporting tools in the form of web applications or delivered reports.

Background Image: De-identified image of the landscape that a sensor is measuring, used in the Dashboard and reports to provide context for object data aggregation and aid in the interpretation of object tracks.

Calibration Mode: Temporary period of increased image sampling and retention for quality assurance activities or algorithm re-training purposes.

API: Application Programming Interface; Numina's API gives customers access to object data aggregates and insights for their own use.

Information We Collect

Numina's sensors capture [Detection Images](#) multiple times per second, and use [edge processing](#) to extract [object data](#) from the images in real-time. These images are not stored or sent to any other server, and the image is deleted from the sensor as soon as it has been processed. Object data extracted from the processed images are transmitted to the cloud and deleted immediately after transmission.

Sensors also collect [Sample Images](#) for use in training and validation services. Once per hour, at a random time within each 1-hour interval, one of the Detection Images is transmitted to Numina's servers. This sample rate equates to approximately 0.003% of the total images collected and processed by the sensors. These images are used by Numina to evaluate how our models are performing and make adjustments to improve their accuracy.



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All Sample Images are low-resolution (less than 1 pixel per cm) and of low image quality, which means they typically reveal no [Personally Identifiable Information \(PII\)](#). Out of additional precaution, all Sample Images are put through an image de-identification process that blurs the image to ensure that no PII is visible. The [Original Sample Images](#) are never viewed directly or shared outside Numina. They may be stored and used by Numina for up to 30 days, and are deleted at the end of that period. The [De-Identified Sample Images](#) are used for model evaluation and may be shared with customers or for demonstration purposes. They may be stored on Numina servers for up to 180 days beyond the original retention period, and, on rare occasion, some permanent retention may occur if the customer gives permission for the inclusion of images in reports and communications.

Finally, [Background Images](#) are de-identified images used in the [Dashboard](#) to provide context for object data aggregation and aid in the interpretation of object tracks. These images are carefully selected to minimize the number of objects visible and never contain PII. There is one Background Image for each sensor for each scene. The Background Image may be updated if the scene changes due to sensor positioning, seasons, or other context. Background images may be stored indefinitely.

Calibration Process

For the first two weeks of every deployment, the sensors are configured into a [Calibration Mode](#). While the sensor is in Calibration Mode, the standard data sampling and retention policies are modified. There is an increase in image sampling, with up to 5 random images sampled per hour (approximately 0.02% of the total images collected), and video collection (in the form of a sequence of images with an 8 frame-per-second sample rate) of up to 1 minute per hour (approximately 1.7% of the total images collected) sampled at a random time per hour. **Data collected while in Calibration Mode is not deleted.** This calibration data enables us to continually improve our machine learning algorithms, and is used as a ground truth for benchmarking accuracy of Numina algorithms and to create more accurate models which are periodically pushed out to all sensors. If desired for further performance



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improvements, Calibration Mode may be extended or re-engaged later, only with explicit, advanced authorization from the customer. Customers may also opt out of Calibration Mode periods but must request such before sensor installation, in order to avoid the default calibration settings.

How We Protect The Information

Data transmission and storage

Numina's sensors encrypt all communication with TLS1.2 using industry standard AES-256 encryption. Only authorized devices can communicate with sensors. This requirement removes pathways for data interception or sensor access by unauthorized third parties. All of our data is stored in Amazon Web Services (AWS), and access is restricted to current Numina employees and contractors using AWS best practices for identity and access management.

Image De-identification

By design, our sample images are low-resolution (less than 1 pixel per cm) and of low image quality, which means that even Original Sample Images typically reveal no PII. Additionally, images go through a process of [image de-identification](#) before they are viewed internally or made available to any service or agent, which minimizes the chance of any PII being revealed. Currently, our image de-identification consists of blurring the full image, with a higher level of blurring on detected objects. Image de-identification is an active area of research at Numina and will continuously improve as we develop more robust techniques.

GDPR and Country-Specific Compliance

All of our data is stored in Amazon Web Services, which has servers around the world. Original Sample Images, including those collected while in Calibration Mode, are



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stored on servers in the appropriate region and will never be moved between regions for processing or storage. For example, all data collected in the European Union is stored and processed only on servers in the EU.

Data Sharing

De-identified Sample Images may be shared in a limited fashion with our customers and partners. For example, we may share example De-identified Sample Images to help our customers understand Numina functionality, but we will never provide a full set of images collected. For data annotation purposes, we may also share de-identified images with authorized contractors. Numina never shares the Original Sample Images and never sells any images collected from sensors.

How We Use The Information

Object Data

We use the Object Data collected by our sensors to deliver aggregate statistics and insights to our customers. For example, customers can access historical object counts and location-based activity heatmaps for their sensors from our web Dashboard or through our [API](#), via a secure login with end-to-end encryption. We may also prepare and deliver custom reports for our customers with more specific analysis and insights. Our engineers also use Object Data for research and development purposes — for example, to glean new insights about object behaviors (e.g. “dwell time”).

Sample Images

[Sample Images](#) are used for performance evaluation and improvement. After de-identification, they are put through an annotation process, in which authorized agents label objects and activities that they observe in the sample images. This information is important for validating our system performance (quality assurance) and



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providing the data needed to improve and extend our system's capabilities. For example, to train the computer vision algorithms on our sensors to recognize a new class of objects, we must first create a set of training images of that object from Sample Images. The De-Identified Sample Images are available to Numina employees with a secure login that is only issued after they receive specific training in handling potential [PII](#). The Original Sample Images are only accessed programmatically and never viewed by people.

Summary of Data Policies

See the following page for a table summarizing the policies detailed above.

Contact Us

If you have any questions about this policy, please email us at inquiries@numina.co.



Summary of Numina Data Policies

This table summarizes the policies detailed above.

	Format	Example	Collection Frequency	Storage Location	Use	Access	Retention
Original Sample Images	640x480 JPEG	 ★	One per hour, except when sensor is in Calibration Mode	AWS (Region-specific bucket)	Algorithm quality control (accuracy validation)	Numina employees and authorized agents. Images are de-identified before access i.e. no one looks at these images directly.	30 days
Calibration Mode Sample Images	640x480 JPEG	 ★	Up to 5 images and up to 1 minute of video per hour	AWS (Region-specific bucket)	Algorithm improvement and evaluation	Numina employees and authorized agents. Images are de-identified before access i.e. no one looks at these images directly.	Indefinite
De-identified Images	Blurred 640x480 JPEG		Matching original Sample Image collection	AWS (US bucket)	Algorithm improvement and evaluation	Numina employees and authorized agents.	180 days past original image retention
Background Images	640x480 JPEG		One per sensor per scene	Available on Dashboard and in tracks data visualizations	Interpreting object tracks	Dashboard users and report viewers (which may include the general public)	Indefinite
Object Data	JSON Text	<pre>{ "time": "2018-01-01T00:03:45.445445056Z", "box": "[143, 290, 179, 377]", "class": "pedestrian", "trackid": "a1ac09ddf08d0801290sd098sd" }</pre>	Two per second	AWS	Object movement data for the API, Dashboard, and reports	Customer or designated third-parties via Dashboard with valid login. Also accessible by Numina employees for quality control.	Indefinite

★ Images shown are an approximation in the form of a De-identified Sample Image because we do not access Original Sample Images.