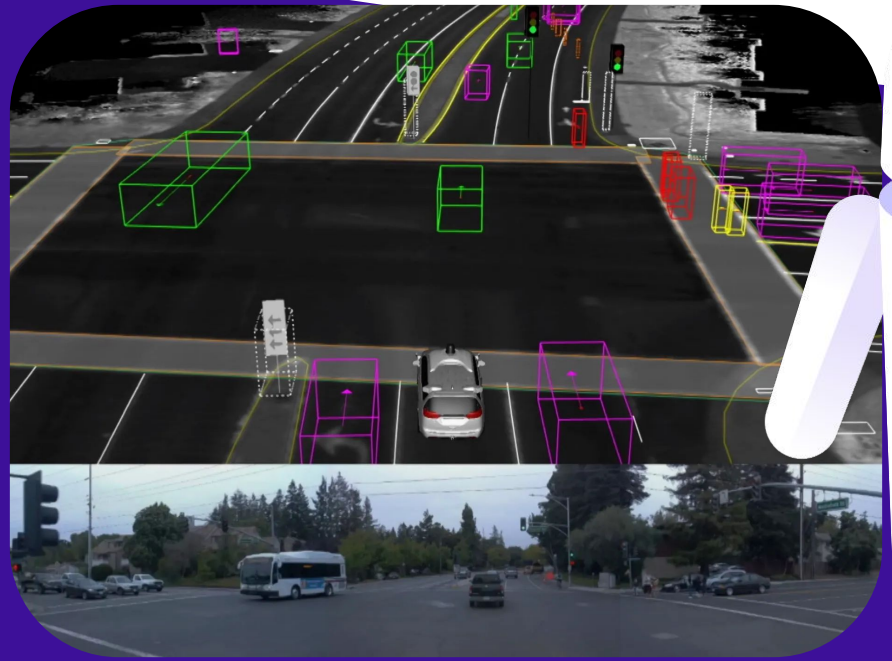
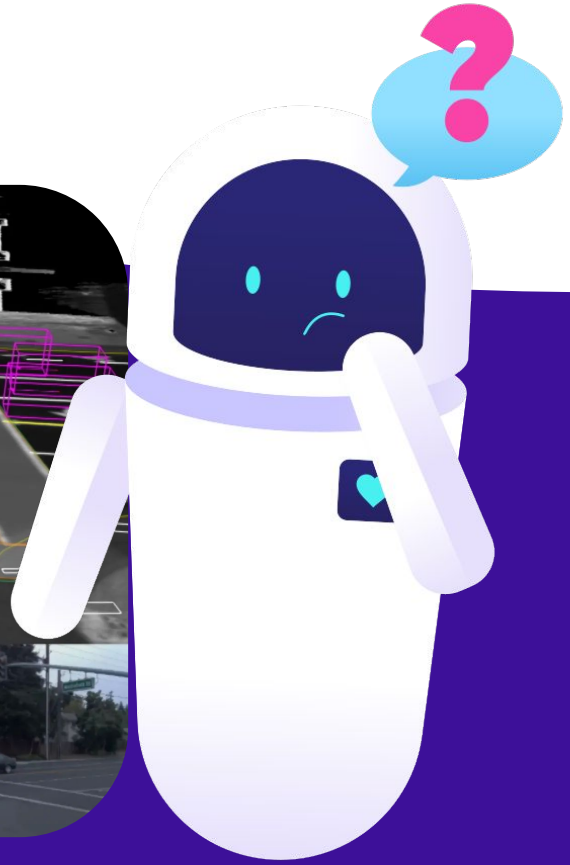
Human-in-the-loop pipelines for remote operators

"Safe, reliable and trustworthy AI systems"
Human Factors in Control forum
Halden, October 15-16

We were promised human-level AI a long time ago

but why aren't we getting there?





AI systems are still not trustworthy

Artificial Intelligence applications are struggling with the

long tail of edge cases

Frequency of occurrence

99.999….%

Number of cases

AI needs humans to help it deal with the complexity of our world

85 Million

jobs will be replaced by machines with AI by the year 2026

but 97 Million

new jobs will be created thanks to AI

➡ One of the jobs of the future created by AI will be a professional **human-in-the-loop**

Source: World Economic Forum

Essential human input for AI

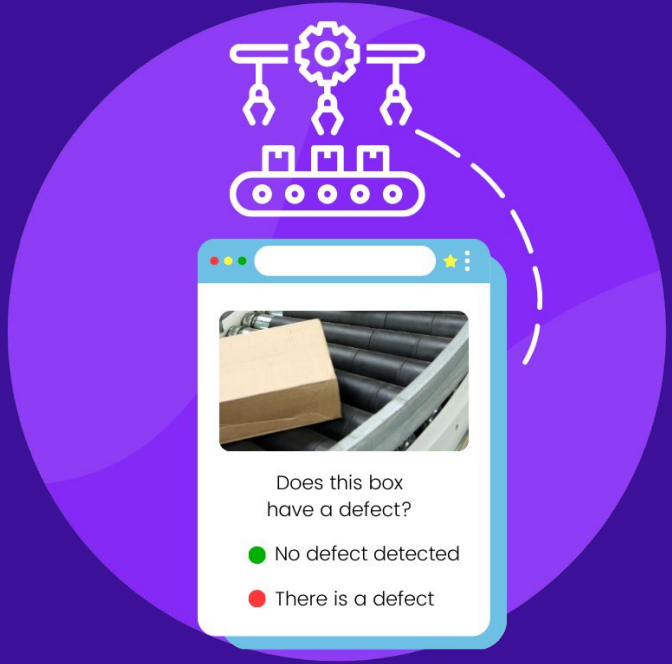
Professional **remote operators** perform the edge case handling and model monitoring in real time that AI companies require in order to guarantee that their **AI systems are trustworthy and reliable**

➡ Handling edge cases in high-risk systems

Operators address flagged or low-certainty cases in real time and can prevent harmful decisions of AI systems

➡ Providing actionable insights

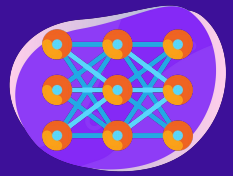
Operators perform error analysis and provide qualitative data on failure modes to help mitigate data and concept drift



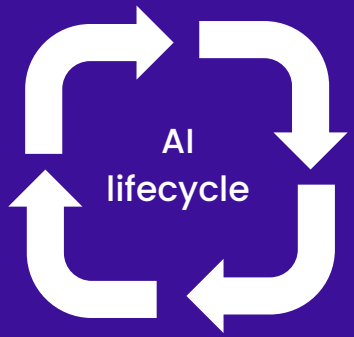
Human-in-the-Loop operators work across the AI lifecycle in order to train, test, monitor, and audit AI systems

How do we close the loop?

humans collect and annotate the training data



1st stage: model training



2nd stage: model testing

humans validate and improve the model outputs

humans review the errors and provide insights

4th stage: model auditing

3rd stage: model deployment

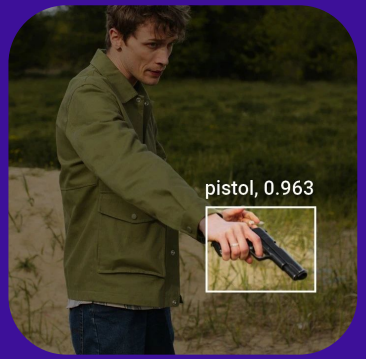
humans monitor the AI model in real time

Use cases

Shoplifter detection

Manufacturing automation

Identity verification



Weapon detection

Access control

Patient monitoring

Why use a human-in-the-loop?

Expert teams

Get access to a dedicated team which goes through an extensive training for your particular use case and signs NDAs.

They develop an unmatched expertise over time which ensures consistency.

24/7 coverage

Our global impact workforce provide 24 hour coverage, 7 days a week.

Shifts are limited to 4 hours per day in order to prevent weariness and to guarantee full attention to the data stream.

Cost-effective

While on shift, human operators are able to monitor several data streams simultaneously.

While handling alerts, during downtime they are available for additional non-urgent data annotation work.

How can this be set up?

Option 1: using your in-house tool

We provide the workforce, you provide the infrastructure!

Many of our clients have custom proprietary platforms and we are happy to plug in our workers in them. You can also send us alerts whenever there is new data available on your tool and our workers will receive them directly on slack.

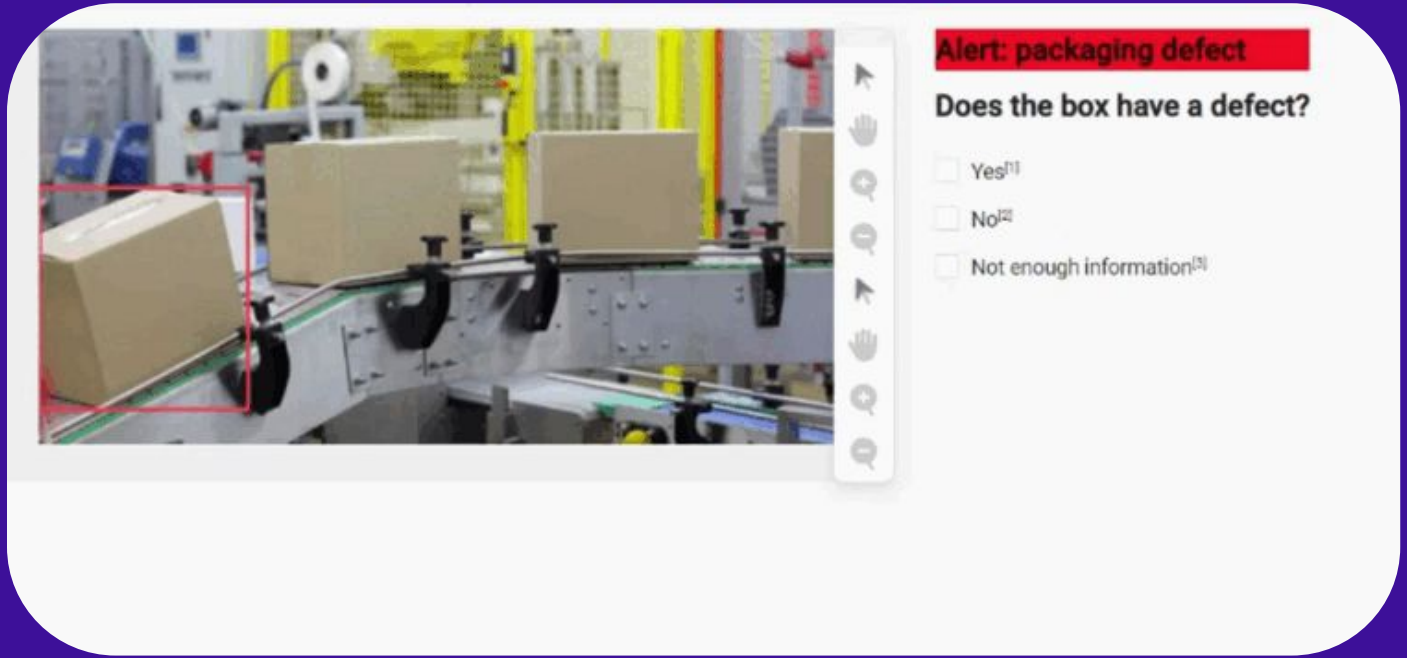
Option 2: using our API integration

We provide both the workforce and the infrastructure, for no additional cost!

You can send pre-signed URLs for your images or other data to our API and you will receive a response to a callback URL by our workers within our agreed timeframe. This is the easiest way to bootstrap a simple human-in-the-loop workflow.

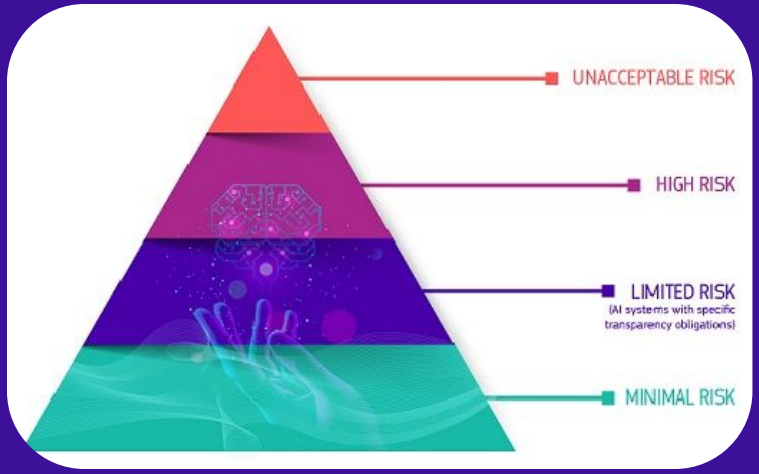
What does it look like?

The remote operator sees a simple interface with alerts popping out whenever a new edge case is available for detection. Consensus labeling and QA workflows can also be enabled.



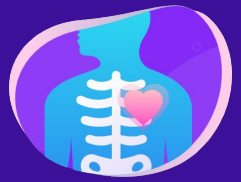
Soon this will be legally required for all high-risk AI systems in the EU

High-risk AI systems (in education, recruitment, surveillance) will be required to have **human operators** who oversee their functioning



- The EU AI Act will come into force starting in 2026, and will publish a registry of all high-risk AI systems in the EU
- Companies will be spending a lot on compliance: the implementation of the EU AI Act will cost **450k USD** per company per high-risk AI system (source)

Sample use case 1: Patient monitoring



Patient monitoring

Humans in the Loop collaborated with a company providing fall detection alerts in hospitals in order to monitor 24/7 streams of video on the client's internal tool. While not monitoring for falls, the workers performed additional annotation on the video.

Sample use case 2: Manufacturing automation

Manufacturing automation

Our workers were engaged in a project for an industrial AI company. With a slack notification for every alert, workers would access the client tool and perform the required manual estimation of liquid level in order for the rest of the operation to proceed.

Sample use case 3: Car park monitoring

Car park monitoring

For the purposes of managing a car and lorry parking lot, our company was engaged in remote monitoring and vehicle plate verification. Whenever the AI system's certainty was under a given threshold, the vehicle number was sent to a remote operator.

Specialized teams

For each client, we work with a dedicated team which receives project-specific training. This helps us ensure consistency in the interpretation of the data and a deep understanding of each client's dataset, taxonomy, and tools

Medical

- Radiology
- Ultrasound
- Robotic Surgery
- Cardiology
- Gastroenterology

Geospatial

- Drones
- Satellite imagery
- Infrared imagery
- SAR
- Natural disasters

Automotive

- Self-driving cars
- Delivery robots
- Insurance
- Damage analysis
- Traffic monitoring

Industrial

- Manufacturing
- Recycling
- Logistics
- Construction
- PPE detection

Agriculture

- Precise farming
- Weed detection
- Plant counting
- Disease detection
- Soil analysis

Retail

- E-commerce
- Fashion
- Smart carts
- Shelf monitoring
- Buyer tracking

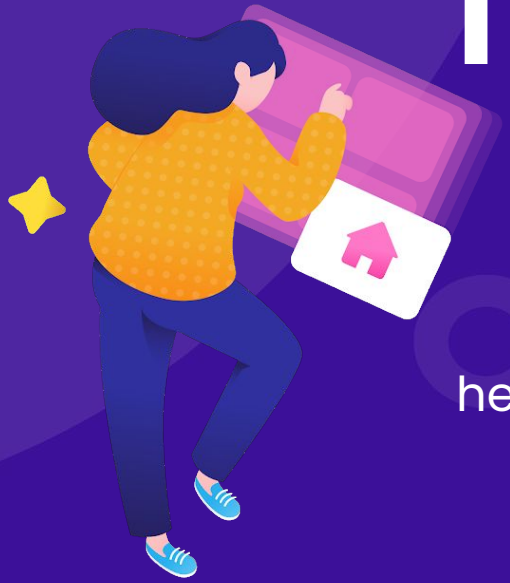
Award-winning impact sourcing model

We work with a network of NGOs around the world to train people from **refugee and conflict-affected communities** in the skills of the future and to provide them with easy and accessible remote digital work

1093
Workers employed

46%
Female workforce

Thank you



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