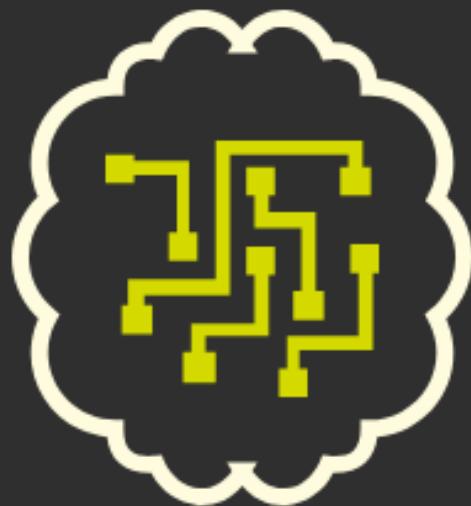
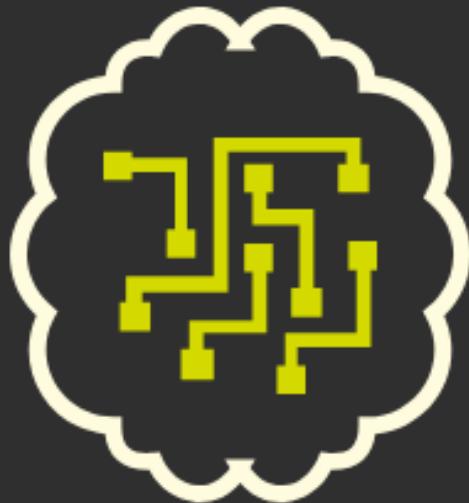


Intelligent Air Quality Sensing and Purifying Rover



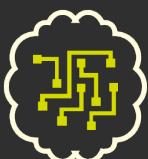
IAQSPR
DATE with AI
National Central University

Intelligent Air Quality Sensing and Purifying Rover



IAQSPR
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National Central University

We all know about air pollution





Pollution-busting bus hits the roads to clean up urban air



A Sparwood resident shares his views at the air quality forum on September 18. Kimberley Vlasic/The Free Press

Teck Coal hosts air quality forum in Sparwood

WELLNESS

How air pollution is making you prone to heart disease?

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can't see it, but it is there: an invisible problem. Since the particles are so small they can get into the bloodstream and go on to cause widespread damage. All of us are breathing in **air pollution**.



Some of the biggest problems are the worsening of these conditions.

There are tiny 'nano-particles' in the air called free radicals that can injure

These nano-particles – less than a

Industry News: A World of Environmental Monitoring Under One Roof

Attend the Air Quality and Emissions event 2018 to learn about the latest developments in air quality testing

28 Sep 2018

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According to the World Health Organisation, 4.2 million people die every year from exposure to outdoor air pollution and a further 3.8 million die from indoor pollution - 6 of the world's population lives in places where air quality exceeds WHO guideline limits.



Outdoor air purifiers and inside play: Delhi gears up for annual pollution fight

Indian authorities are attempting to tackle the capital after record levels in 2016



and how it affects our health

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Reviewed by James Ives, MPsych

Sep 26 2018

Outdoor air pollution is a major contributor to indoor air pollution -- but high-efficiency particulate air (HEPA) filters used in the home significantly reduce fine-particulate matter in the air compared with non-HEPA air filters, according to a new two-year study led by researchers at Intermountain Healthcare in Salt Lake City.

For the study, researchers monitored air quality for 12 weeks in the homes of enrolled patients who had respiratory problems. They found that the HEPA filters reduced fine





Pollution-busting bus hits the roads to clean up urban air

People put a lot of effort into *outdoor* air quality...

A Sparwood resident shares his views at the air quality forum on September 18. Kimberley Vlasic/The Free Press

Teck Coal hosts air quality forum in Sparwood

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Some of the biggest problems are the worsening of these conditions:

There are tiny 'nano-particles' in the air called free radicals that can injure living tissue.

These nano-particles – less than a

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28 Sep 2018

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Research shows indoor HEPA filters reduce indoor air quality outdoors

Sep 26 2018

Outdoor air purifiers and inside play: Delhi gears up for annual pollution fight

Outdoor air purifiers and inside play: Delhi gears up for annual pollution fight



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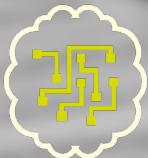
For the study, researchers monitored air quality for 12 weeks in the homes of enrolled patients who had respiratory problems. They found that the HEPA filters reduced fine





But...

What about *indoor* air quality?



30%

*cardiovascular diseases caused by
indoor ambient air pollution.*

Ref: WHO report: Preventing non communicable diseases (NCDs) by reducing environmental risk factors



Indoor air is

5X

more polluted than outdoors.

Ref: EPA report: What are the trends in indoor air quality and their effects on human health?





How many people *DIED* due to ambient air pollution:

4.2 million

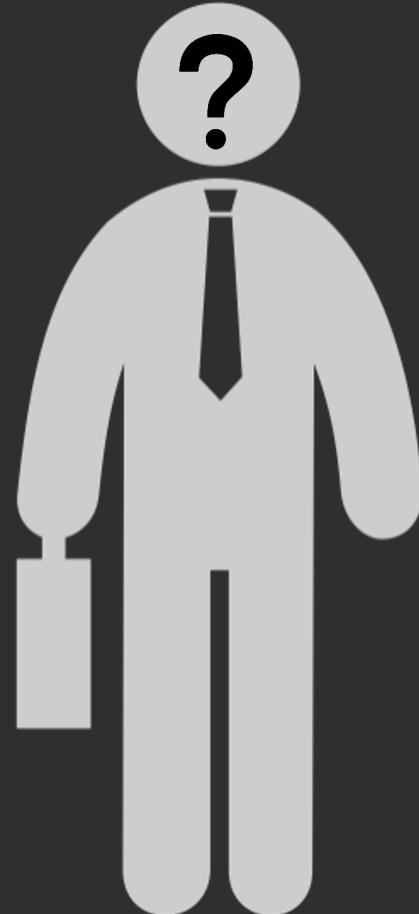
According to the WHO, ambient air pollution is the cause of four point two million deaths annually worldwide.

Reference: Air Pollution by Hannah Ritchie and Max Roser

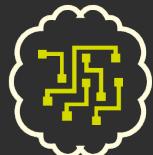




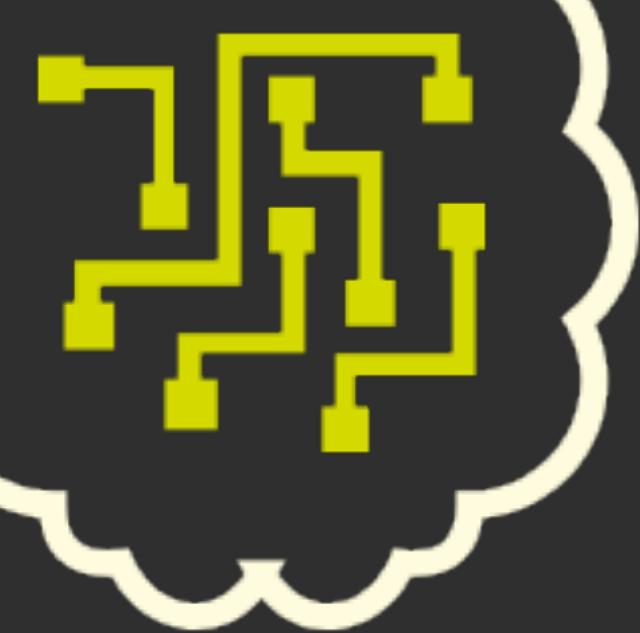




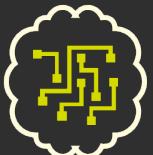
HOW to solve the problem?

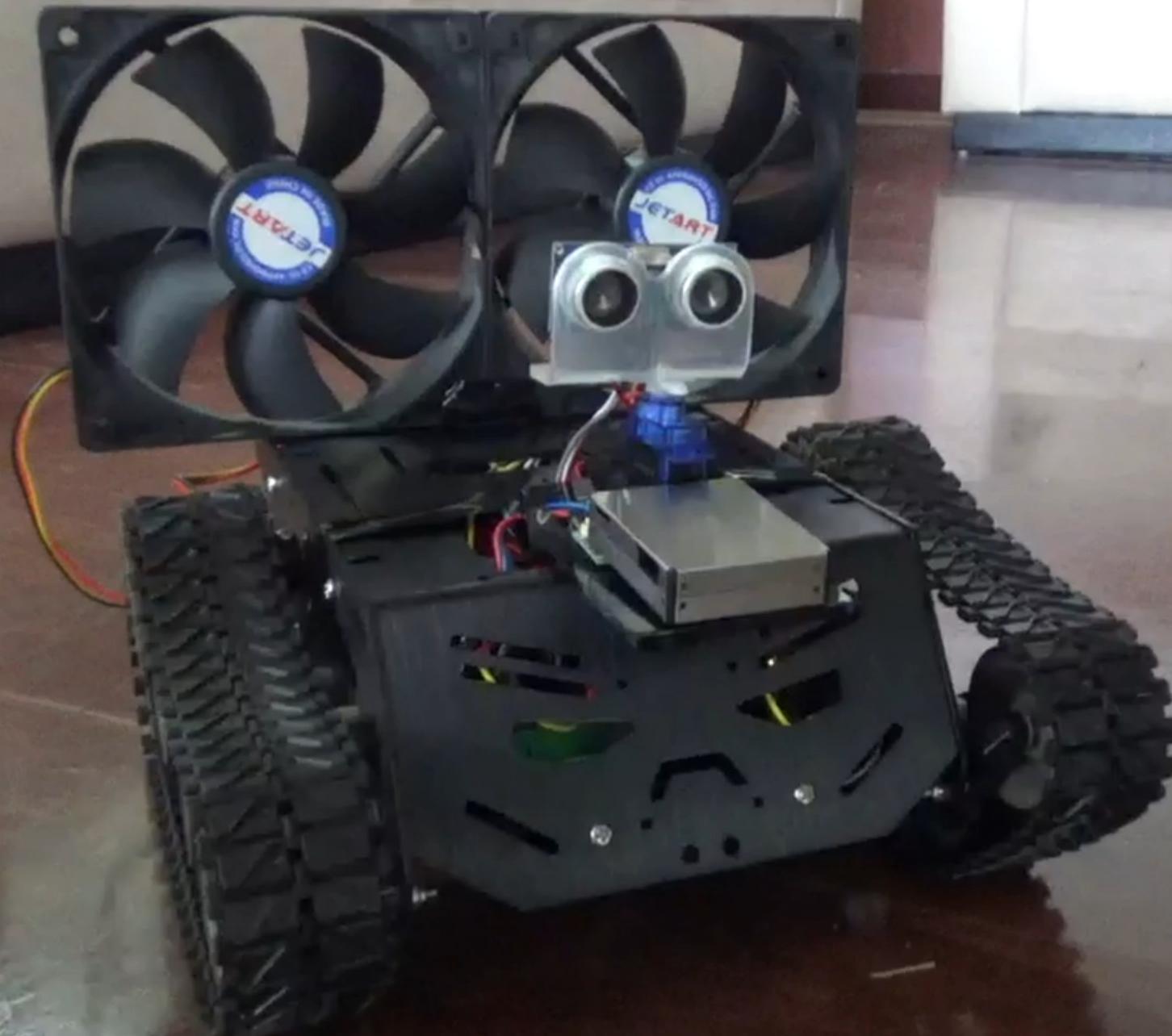




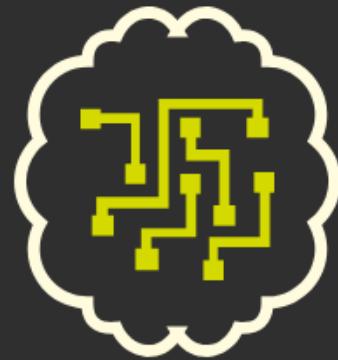


Let's take a look at this video here...



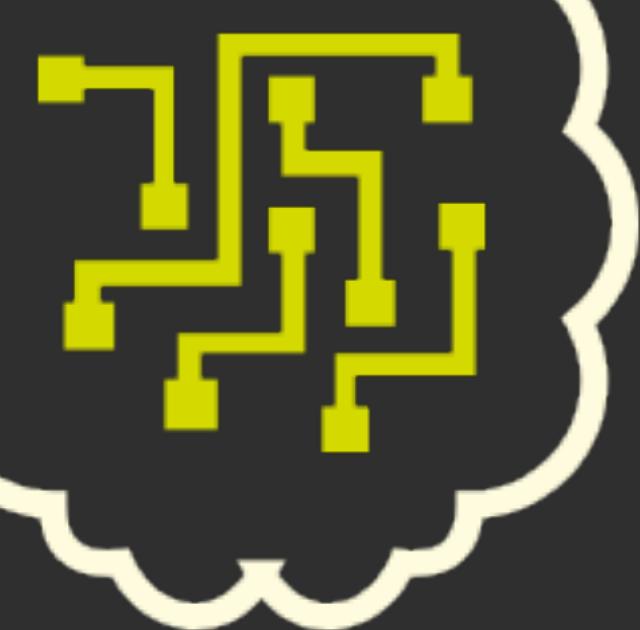


Intelligent Air Quality Sensing and Purifying Rover



See IAQSPR in Action
Detection, Analysis, Treatment





Detection, Analysis & Treatment Intelligent Air Quality Sensing and Purifying Rover

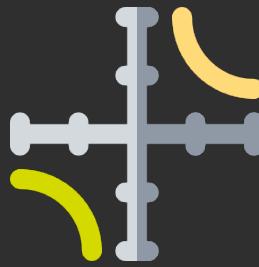
with AI



Detection



AI Air Quality Sensing



Coordinate System



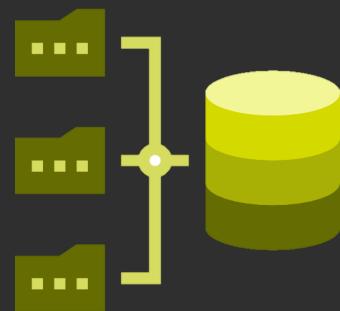
DATE with AI



SLAM



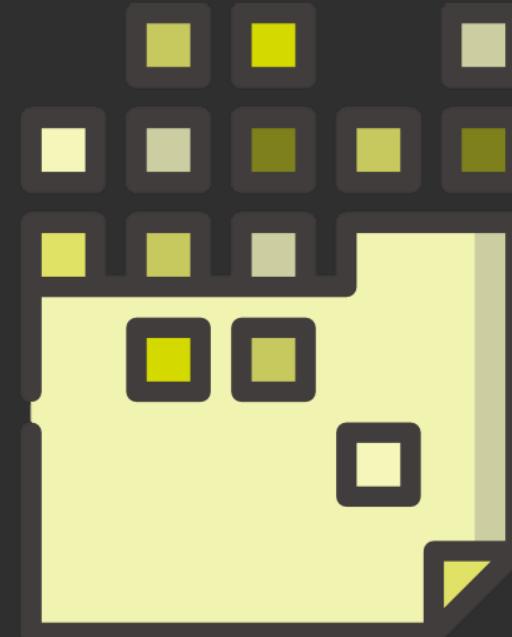
Analysis



Database



Sync



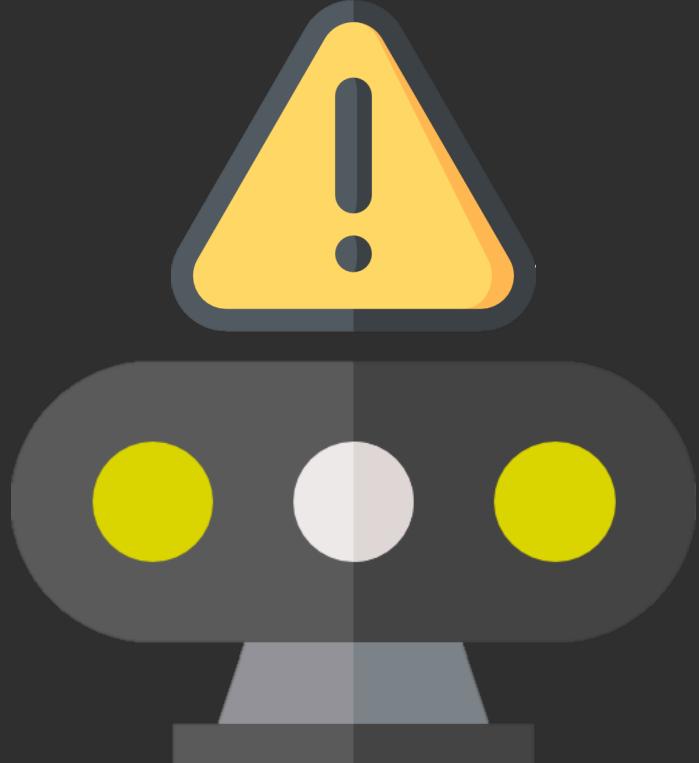
Prediction for
Detection and Treatment

DATe with AI

20

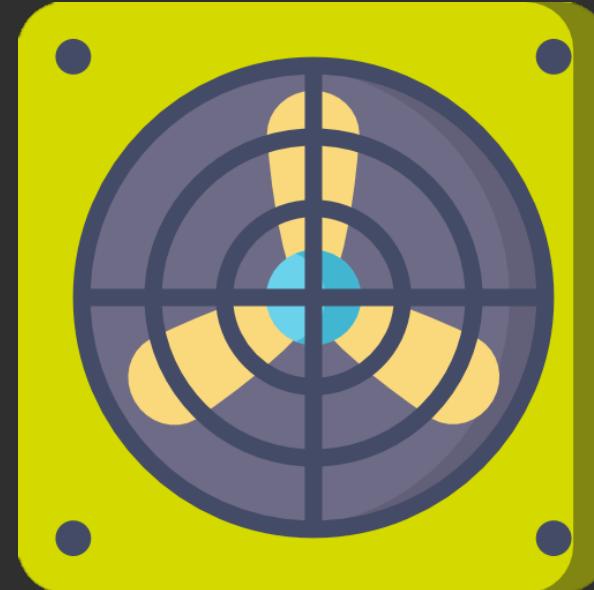


Treatment

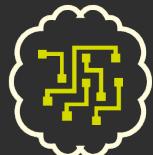


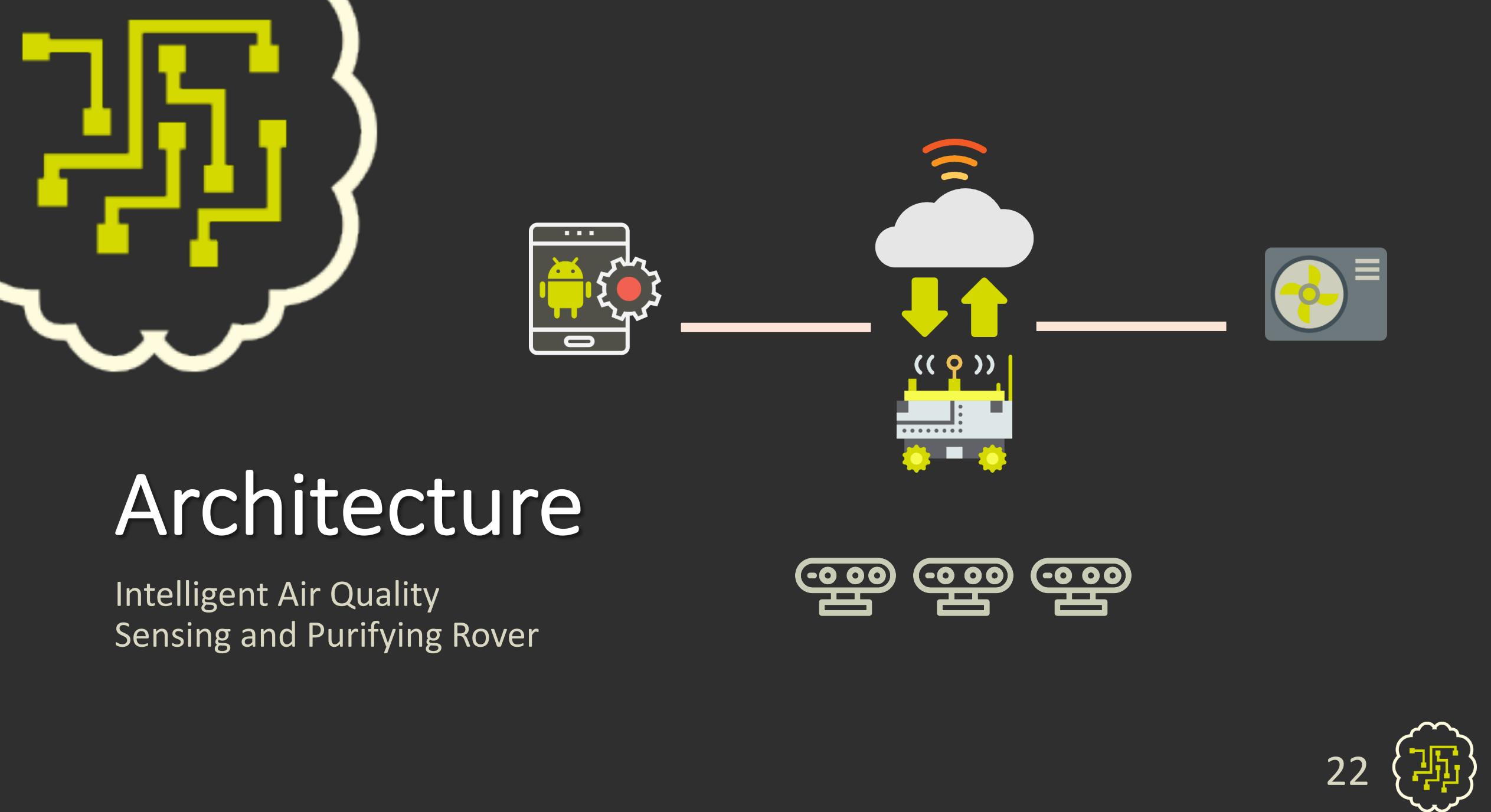
Bad Air Quality

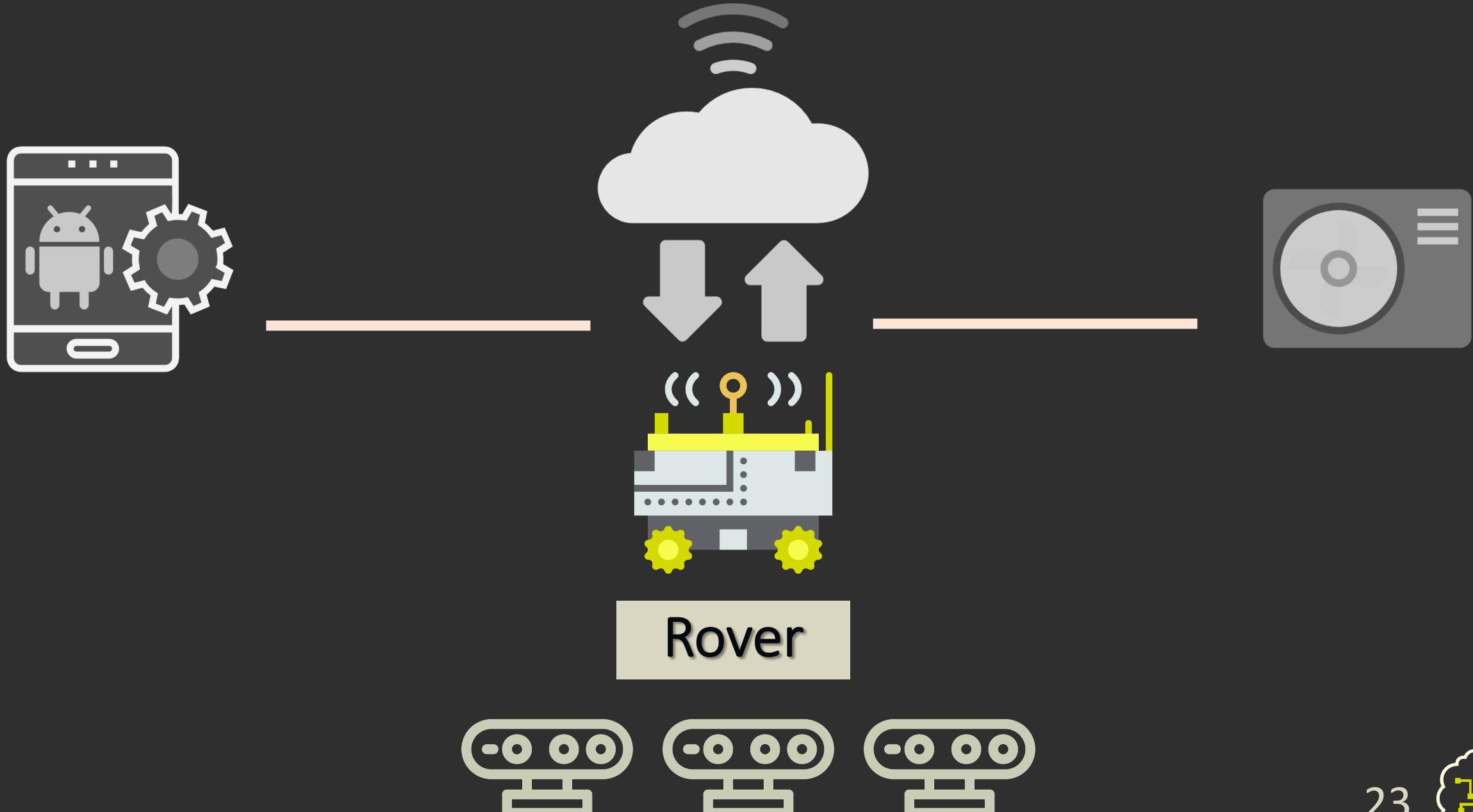
DATE with AI

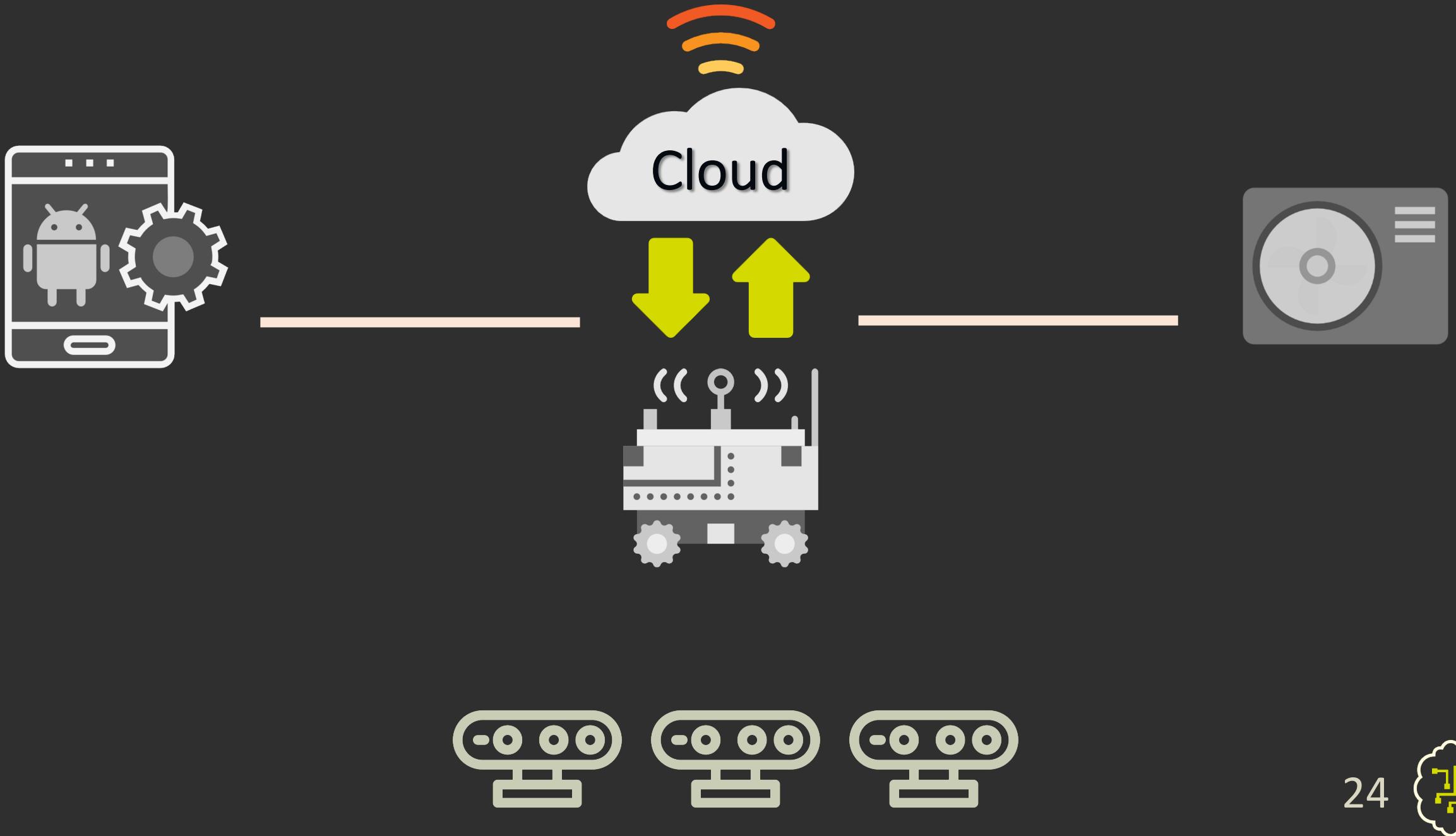


Purify





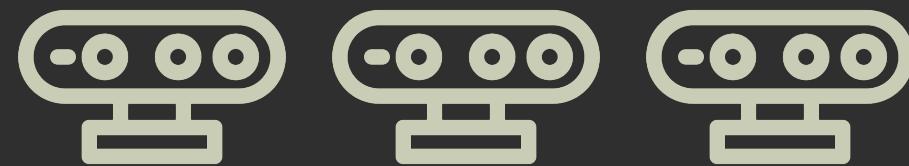
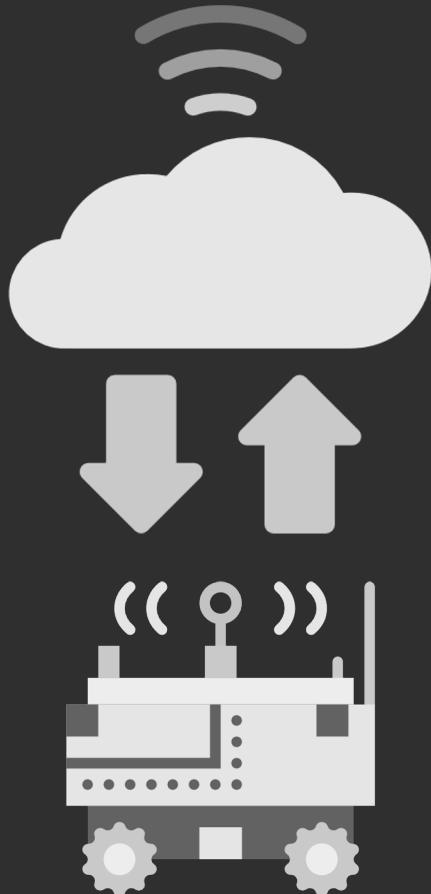


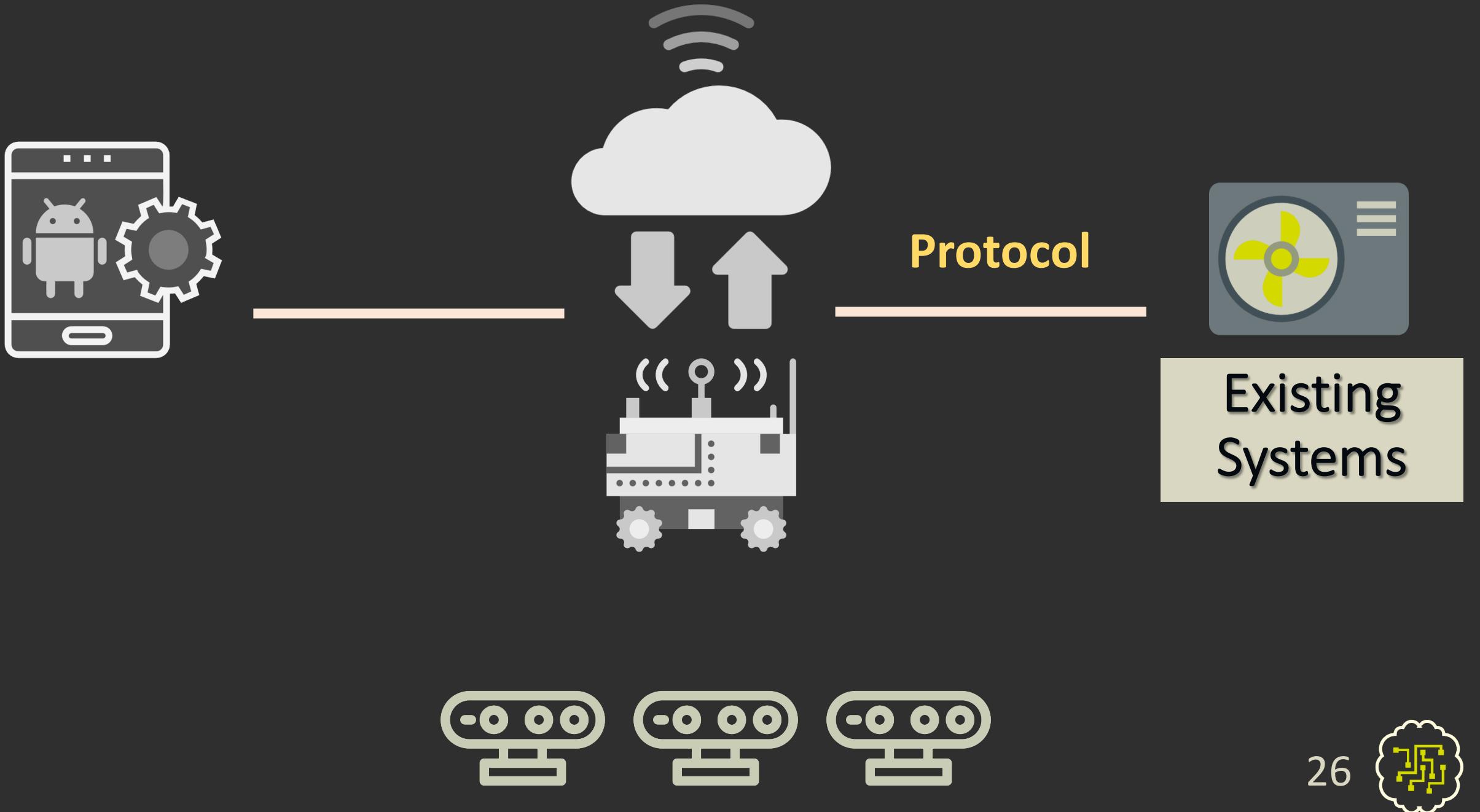


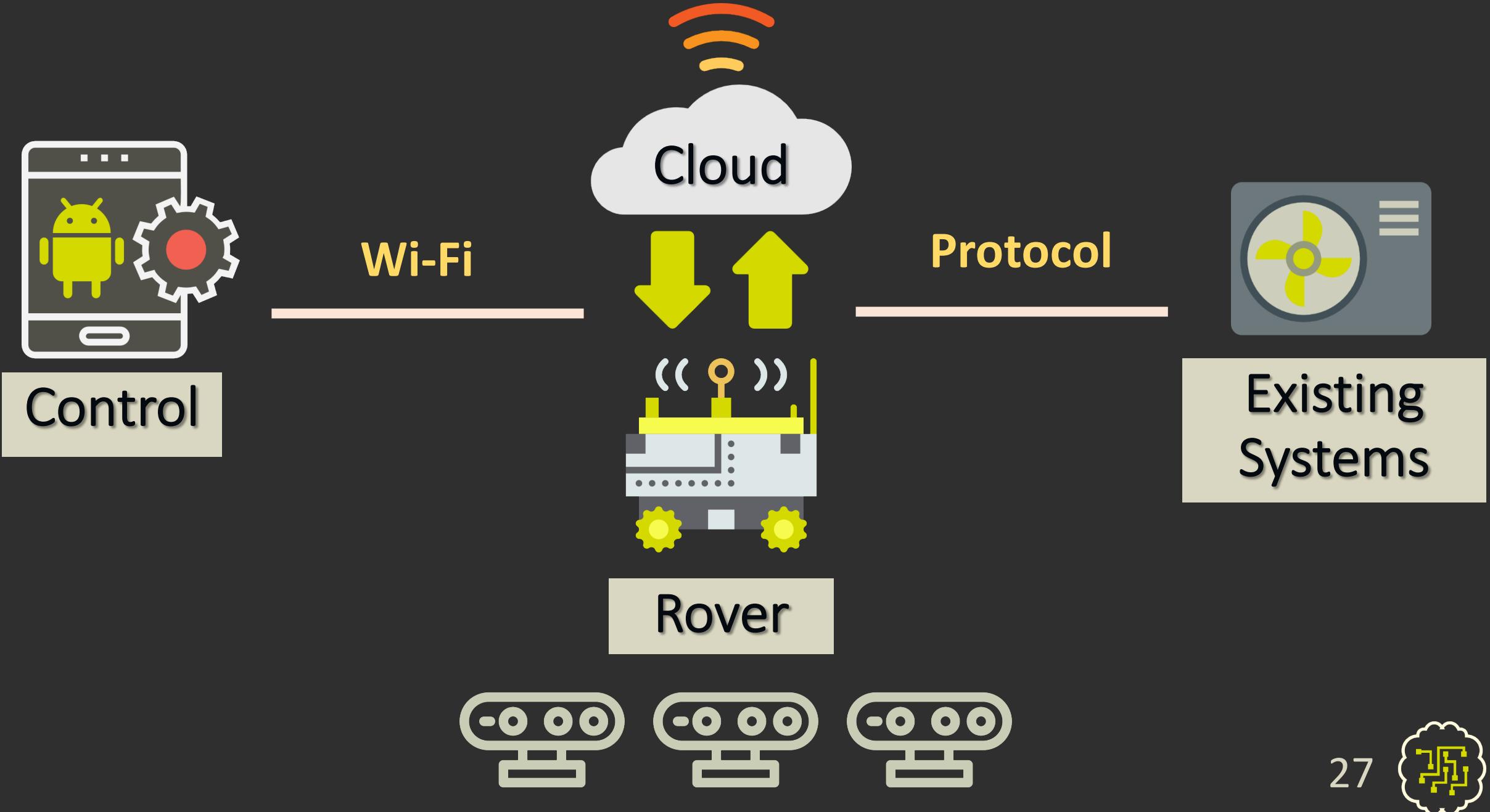


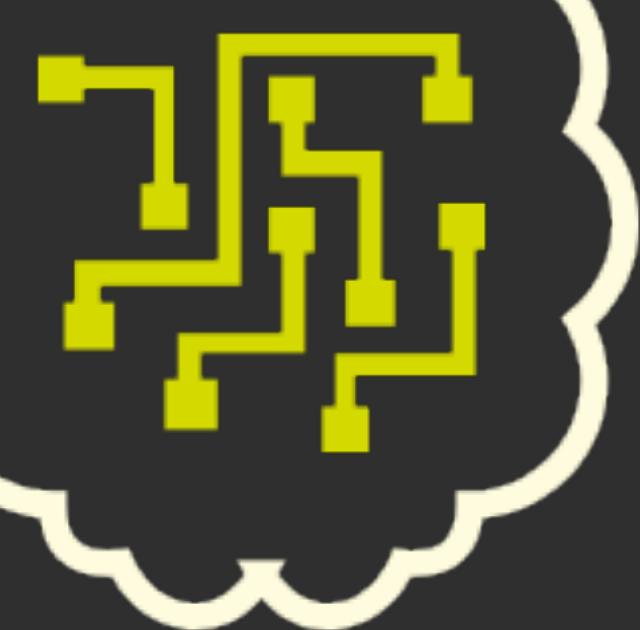
Control

Wi-Fi









IAQSPR's features

Intelligent Air Quality
Sensing and Purifying Rover





✓ Ease of Use

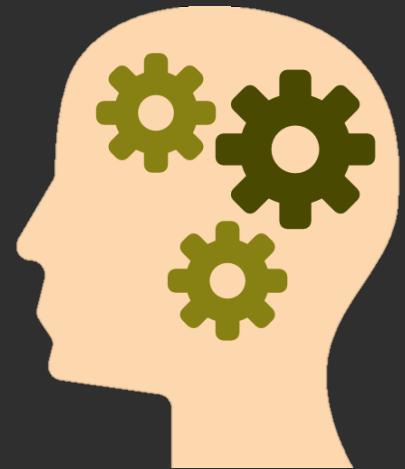


✓ Cost Friendly



✓ Educational



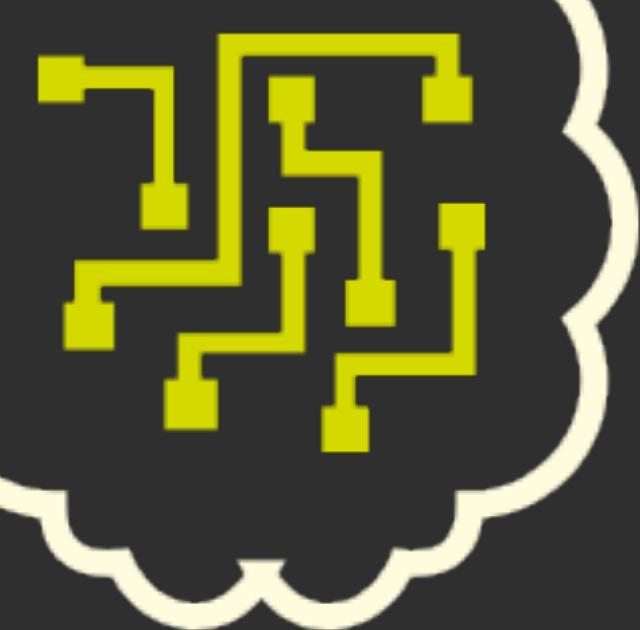


✓ Self-Learning



✓ Customizable
and Upgradable





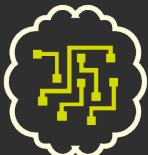
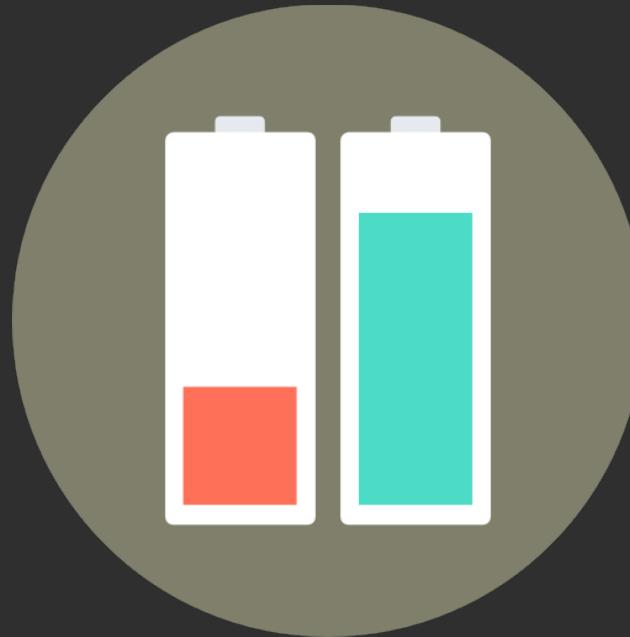
Q & A

Intelligent Air Quality
Sensing and Purifying Rover



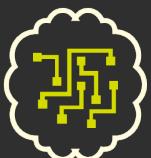
Q: What about the power supply?

A: Commercially available integrated design.
Upgradable to lithium-ion battery with a charging base.



Q: What if purifier interferes sensor?

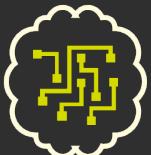
A: 1. Separation
2. Airflow



Q: How does IAQSPR connect to existing ventilation devices?

A: In our prototype, we used infrared remote control. But these are also commonly used IoT protocols:

Wi-Fi, Zig-bee, Bluetooth, EnOcean



Q: How is IAQSPr AI?

A: Cooperation with another projects at our university.

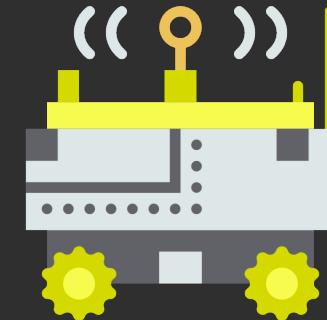
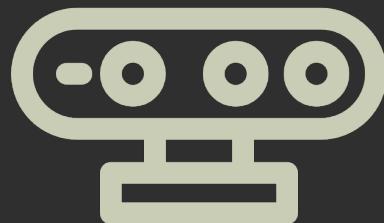
AlaaS 2018: a platform for machine learning models.

Black box.



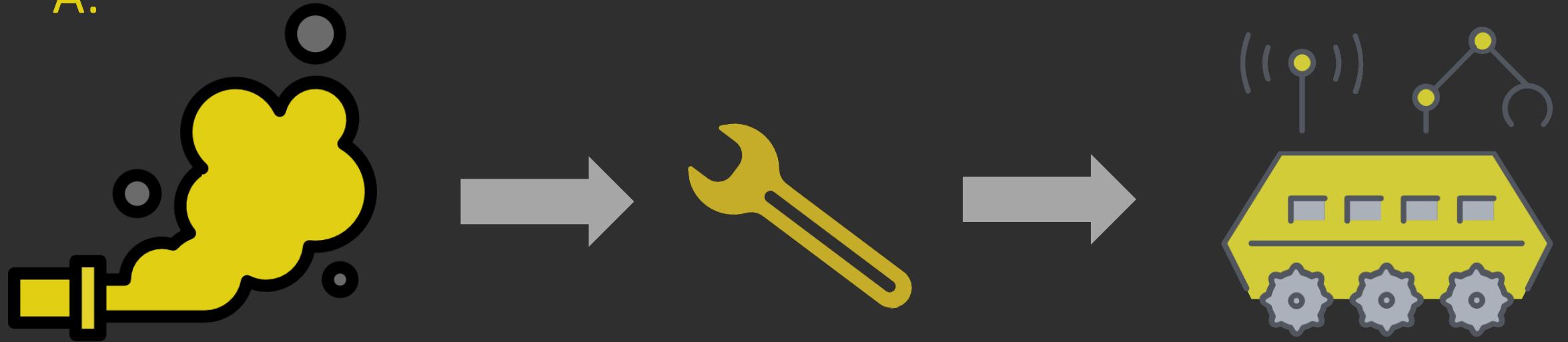
Q: What would be an ideal specification for an commercialized IAQS PR product?

A:



Q: What is IAQSPR'S business model ?

A:



Needs
an IAQSPR

Customize
an IAQSPR

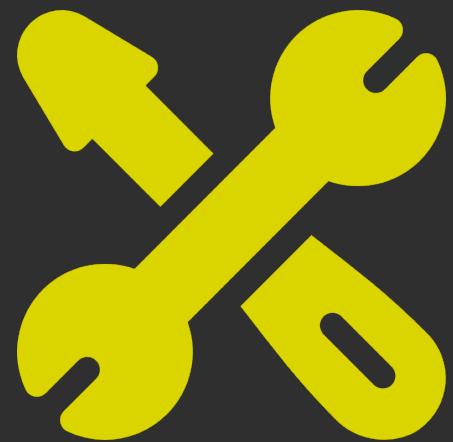
Deliver
an IAQSPR



Q: What is IAQSPR'S business model ?

A:

1



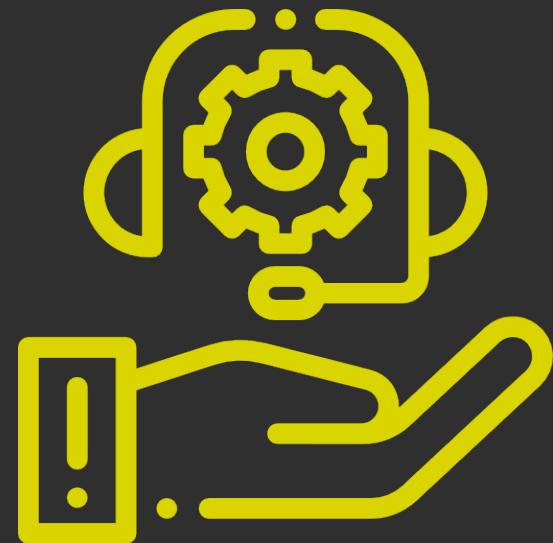
Routine
Maintenance

2



IAQSPR
Upgrade

3



Active Service
38

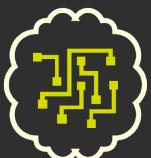


Q: How to differentiate IAQS PR?

A:



Current Solution



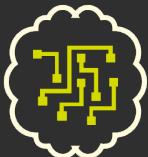
This is our solution.....



Android app companion

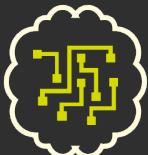
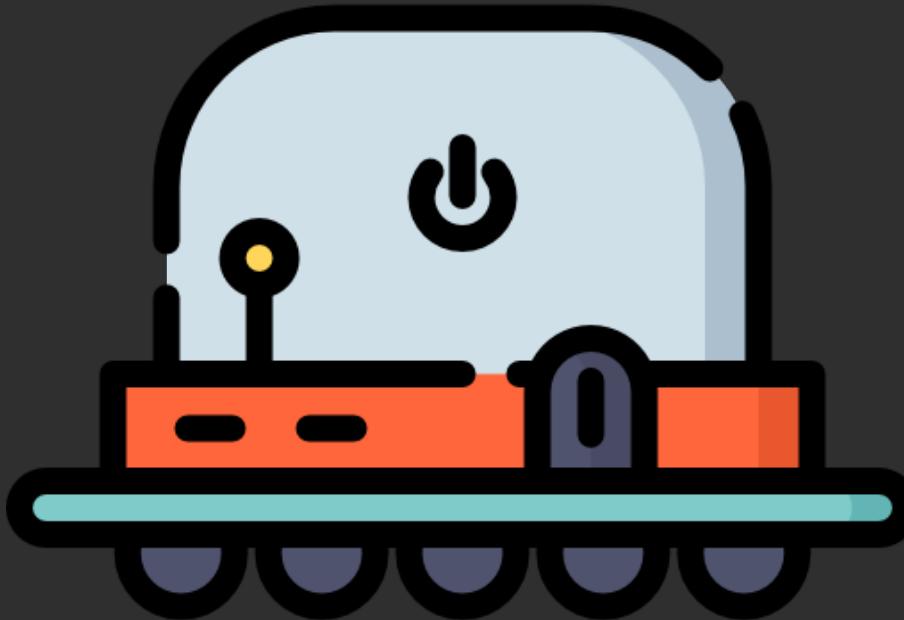


Clean any corner



Q: What is the difference between the routing algorithms of IAQSPR vs Sweeping robot?

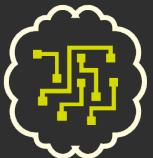
A:



Q: The reference of air standard determination?

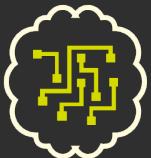
A: It can be adjusted to local standards.

GuangZhou city.



Q: The difficulties we've encountered are ...?

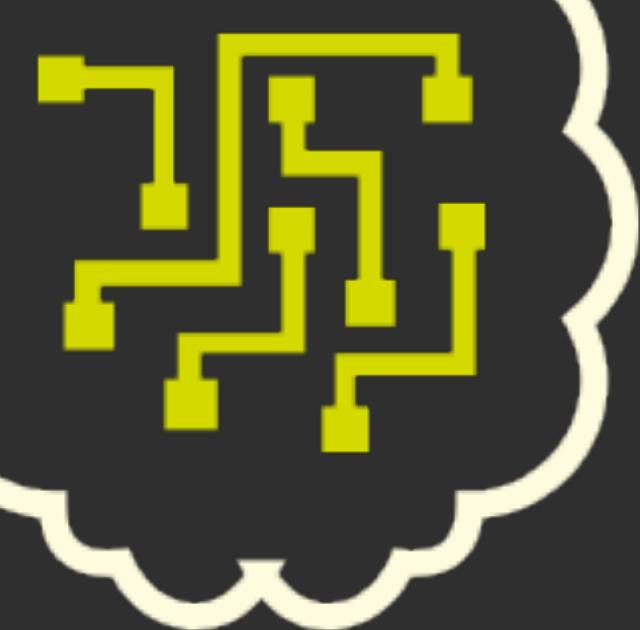
A:



Q: How we lower the level of formaldehyde?

A:





Thank you

Intelligent Air Quality
Sensing and Purifying Rover

