

Building an AI-Powered Bird Watcher with balena and Edge Impulse

Mithun Das

Edge Impulse Ambassador

Marc Pous

Developer Advocate at balena.io

01/10/2021

Today

$\frac{1}{3}$ Stories about birds + AI + IoT

$\frac{2}{3}$ Let's build it together and learn about the future



Let me tell you a story...

Imagine



Vilallonga de Ter

Bird Buddy: A Smart Bird Feeder

https://www.kickstarter.com/projects/mybirdbuddy/bird-buddy-a-smart-bird-feeder

DESCUBRIR Empieza un proyecto

KICKSTARTER

Búsqueda Q Iniciar sesión

Bird Buddy: A Smart Bird Feeder



Bird Buddy notifies you of feathered visitors, captures their photos and organizes them in a beautiful collection!

Pre-order now!

Creado por
Bird Buddy

22.925 patrocinadores contribuyeron 4.190.158 € para que este proyecto se pudiera realizar.

Última actualización 4 de agosto de 2021

Campaña Preguntas frecuentes 6 Actualizaciones 16 Comentarios 1.631 Comunidad



Apoyar

Contribuir 1 € o más



balena dashboard | damp-pond X Dashboard - FAB16 - Edge Impulse X Pájaros en la Nube: qué es el pro... X

<https://pajarosenlanube.ibercivis.es/2020/11/09/pajaros-en-la-nube-proyecto/>

Inicio Profesores Proyecto Blog de Actualidad Recursos del proyecto 

Pájaros en la Nube: qué es el proyecto

por aembid | Nov 9, 2020 | blog | 0 Comentarios



rograma en tu casa una caseta sensorizada conectada al internet de las cosas y descubre los pájaros de tu entorno.

Bienvenidos al proyecto Pájaros en la Nube que tiene como objetivo la monitorización de la fauna insectívora del entorno. Se trata de un proyecto inclusivo y dirigido a todas las edades en el ámbito de la educación tanto a nivel científico como tecnológico.

Metodología del proyecto Pájaros en la Nube:

Con Pájaros en la Nube, en el aula se aprenderá a crear una caseta y programarla mediante una placa de Arduino, para que, mediante el internet de las cosas y la computación en la nube, se podrá colocar dicha caseta en el exterior y recibir en el aula los datos científicos que se buscan obtener.

Los datos científicos adquiridos muestran la diversidad de la fauna de la zona de los animales, sobre todo pájaros, que

Entradas recientes

- Actividades realizadas en los centros participantes
- Pájaros en la Nube: FAQS
- Ya está lista la caseta de Pájaros en La Nube
- 85 centros escolares participarán en Pájaros en la Nube 2020/21
- Plazo de inscripción hasta el 20/01/2021

Comentarios recientes

- Nuria Aliana Colomer en Pájaros en la Nube: FAQS
- Belen Barbero en 85 centros escolares participarán en Pájaros en la Nube 2020/21
- Miquel en 85 centros escolares participarán en Pájaros en la Nube 2020/21

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[Cookie Settings](#) [Accept All](#)



Pájaros en la nube @ Escola Sant Martí Barcelona

Mapatge d'ocells de Sarrà - 25 de març

Fitxa de camp:

- 1 - Jardins
2 - Can Pon
3 - Parc de j.



Tu



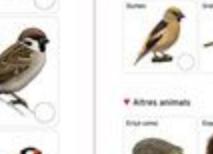
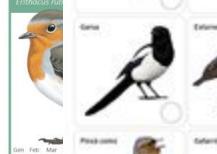
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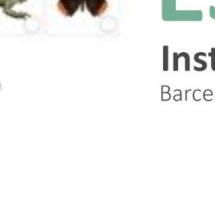
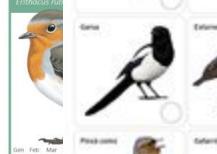
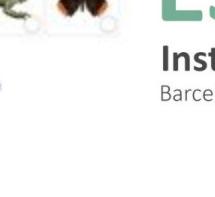
Mz



Cu



Brc



Si us plau entra les dades online a ocellsdelsjardins.cat

ELS OCELLS DE LA NOSTRA ESCOLA

Institut Moisès Broggi
Barcelona

● Resident
● Hivernant
● Estival

Il·lustracions
Àlex Mascarell



Project made by Mithun Das (v1.0)



balena



Project made by Mithun



Project made by Mithun



Sparrow 93%



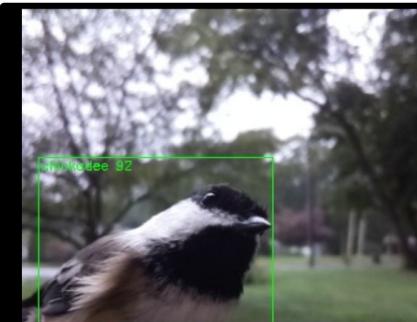
chickadee 94

chickadee

9/24/2021, 7:26:55 AM

Train Edge Impulse

Delete



<http://birdwatcher.local>



V 2.0.0





Project made by @disk91

Goals of the project

Imagine

Learn about birds, nature, IoT and ML

This project is the perfect STEAM project for your children's school or others.



Involve your local community!

Tell them about AI, ML or IoT.



How to retrain a ML model?

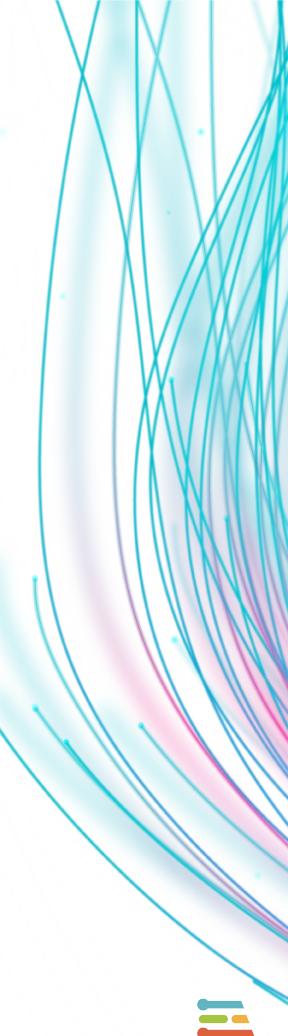
Stay tuned :-)



Let's build it together :-)

Imagine

The DIE HARD method



The KEEP CALM AND USE BALENA method



Deploy with balena



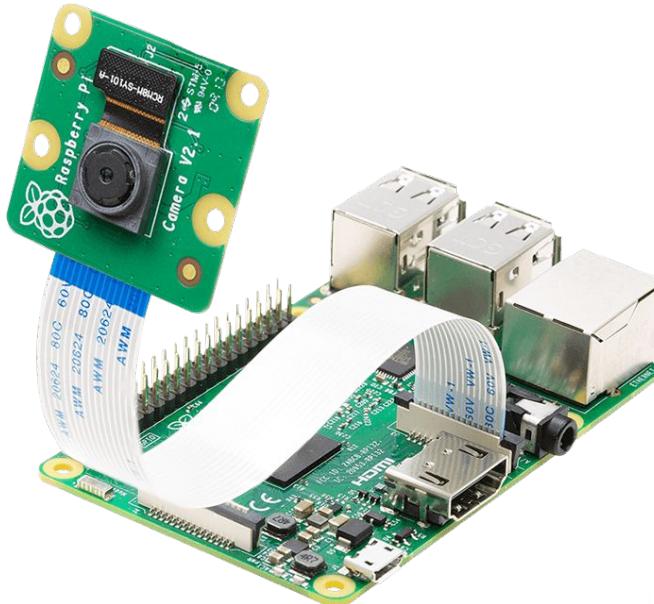
Hardware

Raspberry Pi 4

Pi Camera or USB Camera

SD Card

Power Adapter



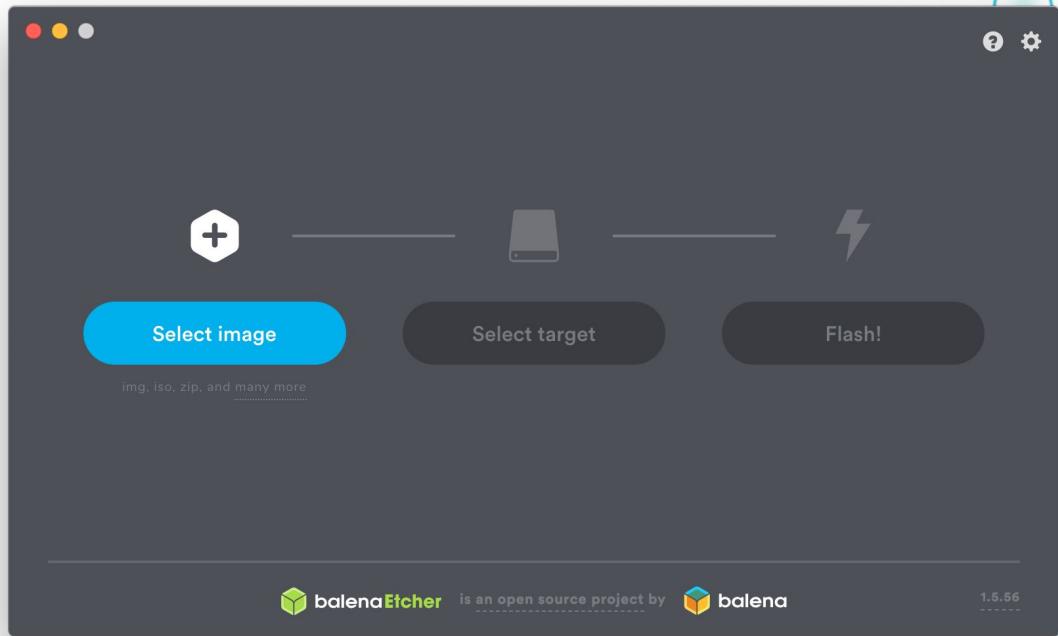
Software

[balenaCloud](#)

[Edge Impulse](#)

[balenaEtcher](#)

Telegram app



The Birds ML model

Imagine

The screenshot shows a web browser window for the Edge Impulse project 'bird-watcher-ei'. The URL is <https://studio.edgeimpulse.com/public/40986/latest>. The dashboard has a purple header with the project name 'Mithun / bird-watcher-ei'. On the left, a sidebar lists various project management and development tools: Dashboard, Devices, Data acquisition, Impulse design (Create impulse, Image, Object detection), EON Tuner, Retrain model, Live classification, Model testing, Versioning, Deployment, GETTING STARTED (Documentation, Forums), and a general EDGE IMPULSE menu.

Creating your first impulse (100% complete)

- Acquire data**: Every Machine Learning project starts with data. You can capture data from a development board or your phone, or import data you already collected.
[LET'S COLLECT SOME DATA](#)
- Design an impulse**: Teach the model to interpret previously unseen data, based on historical data. Use this to categorize new data, or to find anomalies in sensor readings.
[GETTING STARTED: CONTINUOUS MOTION RECOGNITION](#)
[GETTING STARTED: RESPONDING TO YOUR VOICE](#)
[GETTING STARTED: ADDING SIGHT TO YOUR SENSORS](#)
- Deploy**: Package the complete impulse up, from signal processing code to trained model, and deploy it on your device. This ensures that the impulse runs with low latency and without requiring a network connection.
[DEPLOY YOUR MODEL](#)

Summary
DATA COLLECTED
102 items

Project info

Project ID	40986
Project version	1

Dashboard - FAB16-demo - Edge Impulse

https://studio.edgeimpulse.com/studio/44781

Project info Keys Export gy4nt

gy4nt / FAB16-demo

This is your Edge Impulse project!

Welcome to your new Edge Impulse project!

You're ready to add real intelligence to your edge devices. Let's set up your project. What type of data are you dealing with?

Creating your first project

Acquire data

Every machine learning model needs data to learn. You can either train it from scratch or import existing data.

Design a machine learning model

Teach the model what to look for by defining training data. Use sensor readings, images, audio, or something else.

Deploy

Package the complete impulse up, from signal processing code to trained model, and deploy it on your device. This ensures that the impulse runs with low latency and without requiring a network connection.

Accelerometer data

Analyze movement of your device in real-time to predict machine failure, detect human gestures, or monitor rotating machines.

Audio

Listen to what's happening around you to create voice interfaces, listen to keywords, detect audible events, or to hear what's happening around your device.

Images

Add sight to your sensors with image classification or object detection - to detect humans and animals, monitor production lines or track objects.

Something else

Different sensor? No problem! You can collect and import data from any sensor, from environmental sensors to radars - and deploy your trained model back to virtually any device.

I know what I'm doing, hide this wizard!

Sharing

Your project is private.

Make this project public

Summary

DEVICES CONNECTED: 0

DATA COLLECTED: -

Collaborators

gy4nt OWNER

Project info

The screenshot shows the Edge Impulse studio interface with a purple-themed dashboard. A central modal window titled 'Welcome to your new Edge Impulse project!' guides the user through setting up their first project. It asks 'What type of data are you dealing with?' and lists four options: 'Accelerometer data', 'Audio', 'Images', and 'Something else'. Each option has a brief description and a small icon. Below the modal, there's a note 'I know what I'm doing, hide this wizard!' and a 'DEPLOY YOUR MODEL' button. To the left, a sidebar lists project management tasks like 'Create impulse', 'Retrain model', and 'Deployment'. The right side of the dashboard shows sections for 'Sharing' (private), 'Summary' (0 devices connected, - data collected), 'Collaborators' (gy4nt, OWNER), and 'Project info'. The URL https://studio.edgeimpulse.com/studio/44781 is visible at the top.

The screenshot shows the Edge Impulse Studio interface at <https://studio.edgeimpulse.com/studio/44781>. A modal window titled "Welcome to your new Edge Impulse project!" is open, asking "Great! What do you want to detect?". It provides two options: "Classify a single object (image classification)" and "Classify multiple objects (object detection)". The background shows the project details for "gy4nt / FAB16-demo", which is private. The sidebar includes sections for Dashboard, Devices, Data acquisition, Impulse design, Create impulse, Retrain model, Live classification, Model testing, Versioning, Deployment, Documentation, and Forums.

Dashboard - FAB16-demo - Edit X +

Project info Keys Export

gy4nt / FAB16-demo

This is your Edge Impulse project.

Welcome to your new Edge Impulse project!

Great! What do you want to detect?

Classify a single object (image classification)

Detect one object in an image, for example whether you see a lamp or a plant. Image classification is efficient and can be ran on microcontrollers, including development boards from OpenMV, Arduino, Himax and Eta Compute.

Classify multiple objects (object detection)

Detect the location of multiple objects in an image, for example to detect how many apples you see. Object detection is a lot more compute intensive than image classification and currently only works on Linux-based devices like the Raspberry Pi 4 or Jetson Nano.

I know what I'm doing, hide this wizard!

Deploy

Package the complete impulse up, from signal processing code to trained model, and deploy it on your device. This ensures that the impulse runs with low latency and without requiring a network connection.

DEPLOY YOUR MODEL

Sharing

Your project is private.

Make this project public

Summary

DEVICES CONNECTED 0

DATA COLLECTED -

Collaborators

gy4nt OWNER

Project info

Dashboard Devices Data acquisition Impulse design Create impulse Retrain model Live classification Model testing Versioning Deployment

GETTING STARTED Documentation Forums

Dashboard - FAB16 - Edge Impulse

https://studio.edgeimpulse.com/studio/44463

Project info Keys Export

gy4nt

EDGE IMPULSE

Dashboard

Devices

Data acquisition

Impulse design

- Create impulse
- Image
- Object detection

Retrain model

Live classification

Model testing

Versioning

Deployment

GETTING STARTED

Documentation

Forums

gy4nt / FAB16

This is your Edge Impulse project. From here you acquire new training data, design impulses and train models.

Creating your first impulse (100% complete)

Acquire data

Every Machine Learning project starts with data. You can capture data from a development board or your phone, or import data you already collected.

LET'S COLLECT SOME DATA

Design an impulse

Teach the model to interpret previously unseen data, based on historical data. Use this to categorize new data, or to find anomalies in sensor readings.

GETTING STARTED: CONTINUOUS MOTION RECOGNITION

GETTING STARTED: RESPONDING TO YOUR VOICE

GETTING STARTED: ADDING SIGHT TO YOUR SENSORS

Deploy

Package the complete impulse up, from signal processing code to trained model, and deploy it on your device. This ensures that the impulse runs with low latency and without requiring a network connection.

DEPLOY YOUR MODEL

Sharing

Your project is private.

Make this project public

Summary

DEVICES CONNECTED 1

DATA COLLECTED 15 items

Collaborators

gy4nt OWNER

Project info

DATA ACQUISITION (FAB16)

Training data **Test data** **Labeling queue (4)**

Did you know? You can capture data from any device or development board, or upload your existing datasets - [Show options](#)

DATA COLLECTED
6 items

LABELS
2

Collected data

SAMPLE NAME	LABELS	ADDED	LENGTH	⋮
canary-1.jpg.2cfs4ju2	canary	Today, 17:53:26	-	⋮
robin-4.jpg.2cfs4j8l	robin	Today, 17:53:26	-	⋮
canary-5.jpg.2cfs4j2k	canary	Today, 17:53:25	-	⋮
canary-4.jpg.2cfs4ito	canary	Today, 17:53:25	-	⋮
robin-5.jpg.2cfs4isl	robin	Today, 17:53:25	-	⋮
canary-3.jpg.2cfs4idv	canary	Today, 17:53:25	-	⋮

Record new data

No devices connected to the remote management API.

RAW DATA
Click on a sample to load...

Workshop FAB16 - Introducing > just4give/balena-ei-linux-bird... > Create impulse - FAB16 - Edge

https://studio.edgeimpulse.com/studio/44463/create-impulse

gy4nt

CREATE IMPULSE (FAB16)

An impulse takes raw data, uses signal processing to extract features, and then uses a learning block to classify new data.

Image data

Axes: image
Image width: 320, Image height: 320
Resize mode: Fit shortest axis

For object detection transfer learning blocks, use a 320x320 image size.

Image

Name: Image
Input axes: image

Object Detection (Images)

Name: Object detection
Input features: Image
Output features: 2 (canary, robin)

Output features

2 (canary, robin)

Save Impulse

Add a processing block

Add a learning block

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The screenshot shows the Edge Impulse studio interface. On the left, there's a sidebar with navigation links like Dashboard, Devices, Data acquisition, Impulse design, Create impulse (which is selected), Retrain model, Live classification, Model testing, Versioning, Deployment, Documentation, and Forums. The main area is titled 'CREATE IMPULSE (FAB16)' and contains four main components: 'Image data' (red background), 'Image' (white background), 'Object Detection (Images)' (purple background), and 'Output features' (green background). The 'Image data' section has fields for 'Axes' (set to 'image'), 'Image width' (320), 'Image height' (320), and 'Resize mode' (set to 'Fit shortest axis'). It also includes a note about using 320x320 for object detection. The 'Image' section has a 'Name' field set to 'Image' and an 'Input axes' field with a checked 'image' option. The 'Object Detection (Images)' section has a 'Name' field set to 'Object detection', an 'Input features' field with a checked 'Image' option, and an 'Output features' field showing '2 (canary, robin)'. A green 'Save Impulse' button is located on the right side of the 'Object Detection' panel. At the bottom, there are two dashed boxes labeled 'Add a processing block' and 'Add a learning block'. The footer of the page includes the copyright notice '© 2020 EdgeImpulse Inc. All rights reserved'.



Workshop FAB16 - Introducing > just4give/balena-ei-linux-bird... > Image - FAB16 - Edge Impulse

https://studio.edgeimpulse.com/studio/44463/dsp/image/3

EDGE IMPULSE

IMAGE (FAB16)
#1 ▾ Click to set a description for this version

Parameters Generate features

Raw data

canary-1.jpg.2cfs4ju2 (canary)

Raw features ⓘ
0x263032, 0x263032, 0x273133, 0x283234, 0x293335, 0x293335, 0x2a3435, 0x2a3435, 0x2...

DSP result

Image

Processed features ⓘ
0.1490, 0.1882, 0.1961, 0.1490, 0.1882, 0.1961, 0.1529, 0.1922, 0.2000, 0.1569, 0.1...

On-device performance ⓘ

Save parameters

Dashboard Devices Data acquisition Impulse design Create impulse Image Object detection Retrain model Live classification Model testing Versioning Deployment

GETTING STARTED Documentation Forums



Workshop FAB16 - Introducing > just4give/balena-ei-linux-bird... > Image - FAB16 - Edge Impulse

https://studio.edgeimpulse.com/studio/44463/dsp/image/3/generate-features

EDGE IMPULSE

IMAGE (FAB16)

#1 ▾ Click to set a description for this version

Parameters Generate features

Training set

Data in training set 6 items

Classes 2 (canary, robin)

Generating features...

Feature explorer

No features generated yet.

Feature generation output Cancel

Creating job... OK (ID: 1217971)
Scheduling job in cluster...
Job started
Creating windows from 6 files...

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Workshop FAB16 - Introducing > just4give/balena-ei-linux-bird... > Image - FAB16 - Edge Impulse

https://studio.edgeimpulse.com/studio/44463/dsp/image/3/generate-features

EDGE IMPULSE

IMAGE (FAB16)

#1 ▾ Click to set a description for this version

Parameters Generate features

Training set

Data in training set 6 items

Classes 2 (canary, robin)

Generate features

Feature generation output

Sun Aug 8 16:00:11 2021 Construct embedding
completed 0 / 500 epochs
completed 50 / 500 epochs
completed 100 / 500 epochs
completed 150 / 500 epochs
completed 200 / 500 epochs
completed 250 / 500 epochs
completed 300 / 500 epochs
completed 350 / 500 epochs
completed 400 / 500 epochs
completed 450 / 500 epochs

Sun Aug 8 16:00:13 2021 Finished embedding
Reducing dimensions for visualizations OK

Job completed

Feature explorer (6 samples) ?

X Axis Visualization layer 1 Y Axis Visualization layer 2 Z Axis Visualization layer 3

canary robin

On-device performance ?

PROCESSING TIME 9 ms.

PEAK RAM USAGE 4 KB

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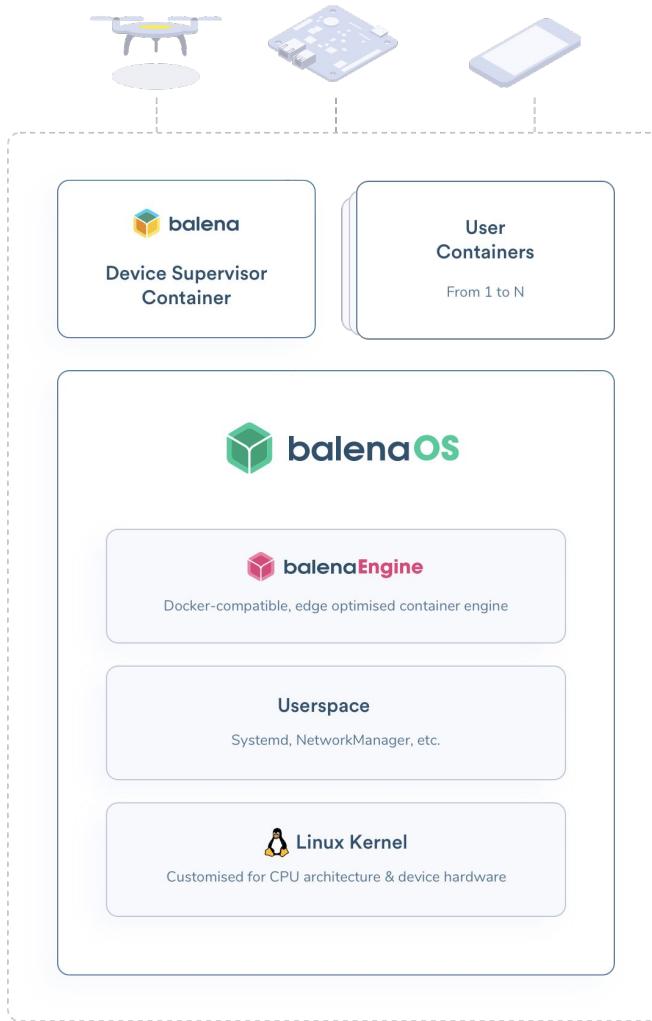
The KEEP CALM AND USE BALENA method



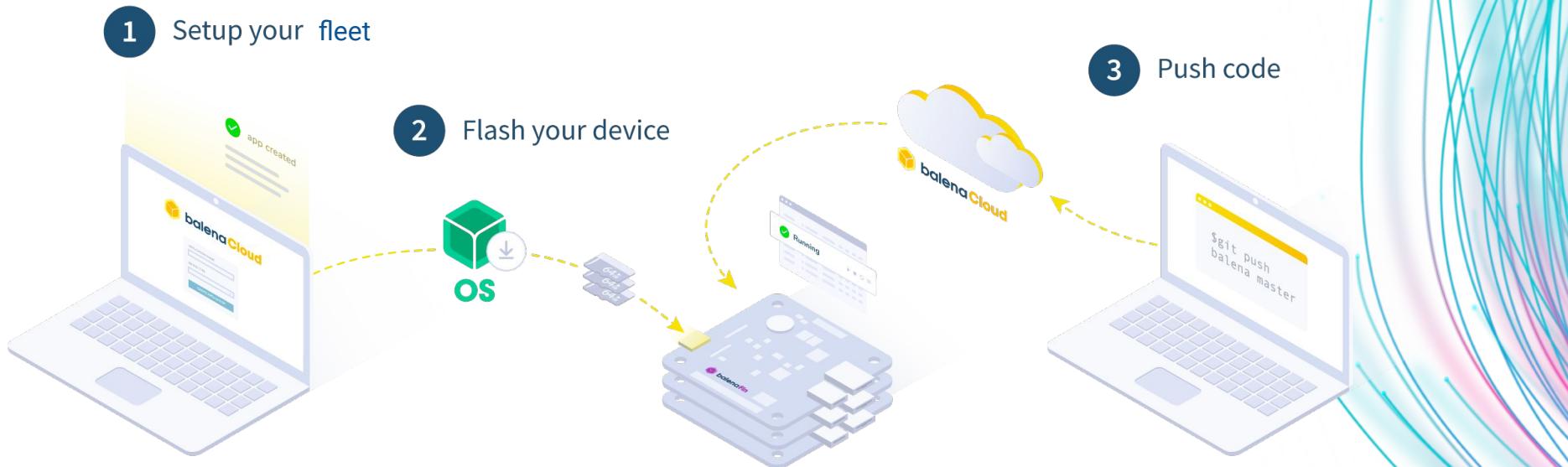
Deploy with balena



Why balena?



How does balena work?



just4give / birdwatcher Public

Code Issues Pull requests Actions Projects Wiki Security Insights

master 4 branches 0 tags

Go to file Add file Code

Mithun Das refactoring web fde86b0 1 hour ago 58 commits

data	Update birds.json	last month
doc	sticky header	2 days ago
ei-processing	fixing date issue on safari	2 days ago
telegram	ingest image to EI studio	last month
web	refactoring web	1 hour ago
.gitignore	initial	2 months ago
README.md	Update README.md	16 hours ago
balena.yml	Update balena.yml	yesterday
docker-compose.yml	Adding hostname	9 days ago
logo.png	changed app name	2 months ago

README.md

Bird Watcher using Edge Impulse Linux SDK and BalenaOS

This project enables you to run Edge Impulse Linux SDK on balenaOS thus allowing you to manage a fleet of

About

No description, website, or topics provided.

Readme

Releases

No releases published Create a new release

Packages

No packages published Publish your first package

Contributors 2

just4give Mithun Das

mpous Marc Pous

Languages

Python 43.0% JavaScript 29.9%

HTML 16.0% CSS 10.3%

balenaHub: an easier way to find... +

https://hub.balena.io

What is balenaHub? Contribute Community

Fleets Projects Blocks

Publish a fleet Add filter

Search entries...

Views

balenaSound by balenaLabs

Build a single or multi-room streamer for an existing audio device using a Raspberry Pi! Supports Bluetooth, Airplay and Spotify Connect

WORKS WITH

NANO

rosetta-at-home-arm by balenaLabs

Fold for Covid - Help fight the COVID-19 pandemic with your old laptop, Raspberry Pi, or other spare computer

WORKS WITH

NANO

air-pi-play by rahul-thakoor

Turn a Raspberry Pi into an Airplay server to enable screen mirroring on tvs, monitors and projectors.

WORKS WITH

NANO

pihole by gh_klutchell's Organization

Pi-hole is a Linux network-level advertisement and Internet tracker blocking application!

WORKS WITH

NANO

rosetta-at-home-amd64 by balenaLabs

Fold for Covid - Help fight the COVID-19 pandemic with your old laptop, Raspberry Pi, or other spare computer

WORKS WITH

NUC

ribbit-network by g_keeanan_johnson's Organization

The sensor for the world's largest crowdsourced network of open-source, low-cost, CO2 Gas Detection Sensors.

WORKS WITH

NANO

lb-dev-aarch64 by Learner's Block

An open-source project that lets individuals and organisations provide their educational resources, websites and apps to users offline.

WORKS WITH

NANO

balena-minecraft-ser... by AlexProgrammerDE

Build a Minecraft Server using a Raspberry Pi 4! Supports common Servers, SCP, RCON and WiFi Connect.

WORKS WITH

NANO

balenaSense by L. Johnson

bookstack by L. Johnson

internetspeedtest by L. Johnson

adguard by L. Johnson

balenaHub: an easier way to fin: X +

https://hub.balena.io/g_mithun_das/birdwatcher

What is balenaHub? Contribute Community

Fleets Projects Blocks

← Back to Fleets

birdwatcher

by g_mithun_das's Organization

Map Hybrid

Get birdwatcher
It's free and open source

2 Active devices, last 28 days

Get started

Description

This project enables you to run Edge Impulse Linux SDK on balenaOS to detect birds

Works With

I Fork this fleet Report issue

Version - View code | last updated at: 30 Sep 2021

North Atlantic Ocean

Ireland Netherlands Poland Germany Ukraine

London Paris Berlin Warsaw Kyiv

Belgium Czechia Slovakia Austria Hungary Moldova

Croatia Serbia Romania Bulgaria Black Sea

Portugal Spain Italy Greece Turkey

Tunisia Algeria Lebanon Israel Cairo

Morocco

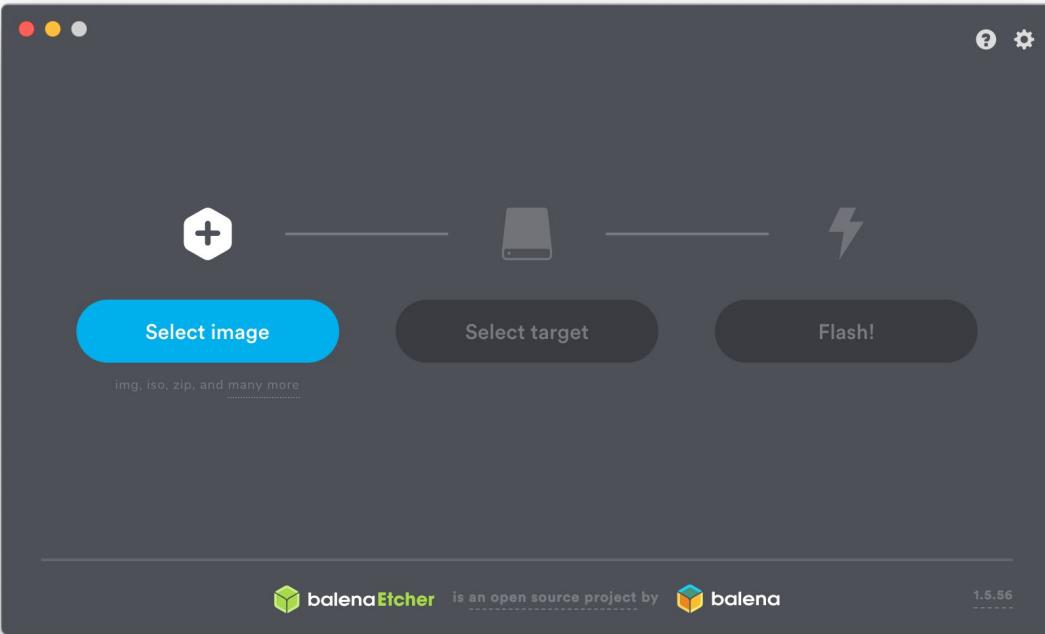
Keyboard shortcuts Map data ©2021 Google, INEGI, Terms of Use

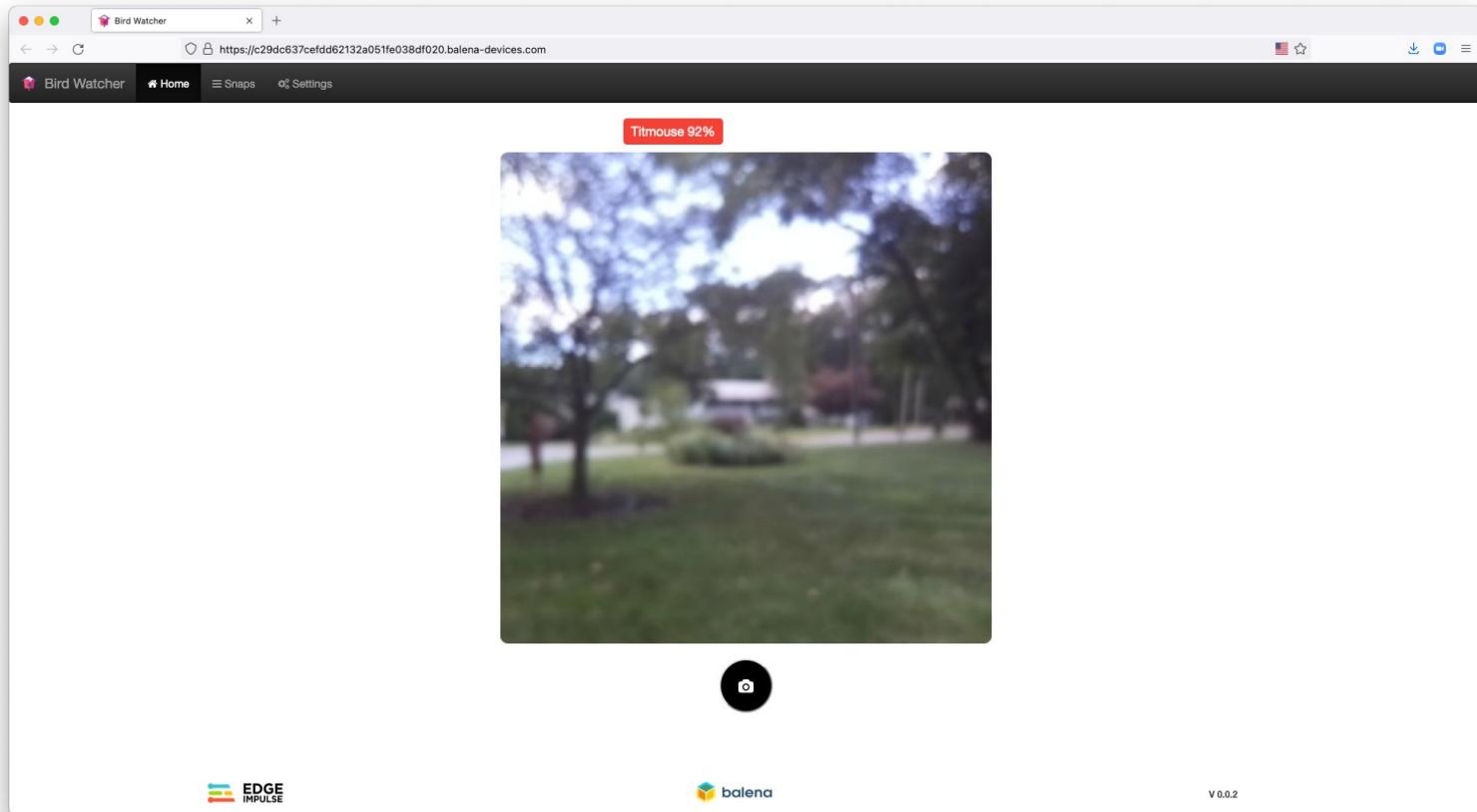
balenaHub A project by balena.io

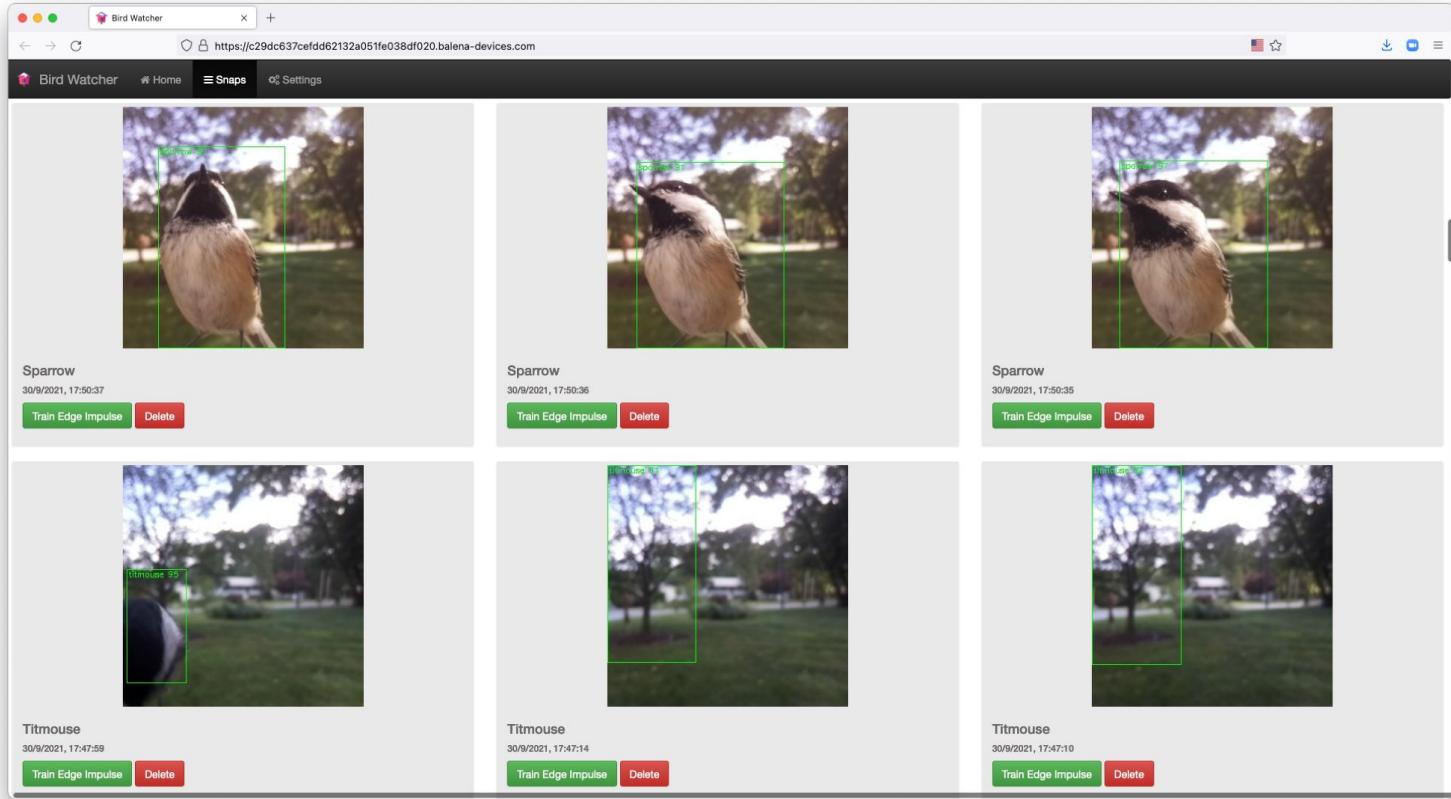
Twitter Facebook Instagram YouTube

Terms of use









Bird Watcher

birdwatcher.local

Bird Watcher Home Snaps Settings

Motion Detection

Enable motion to capture birds not classified by the ML model and retrain the system

Update Motion Detection

Telegram Notification

Telegram Chat ID

Telegram API key 1415420286:AAFK9eESCPbAU

Update Telegram credentials

Edge Impulse API Keys

Edge Impulse API key eI_52e9e2c16407b65bdct9965

Update Edge Impulse API key

Position your BirdWatcher or leave it 0, 0 if you want to stay private

Latitude 41.410

Longitude 2.226

Geolocate your BirdWatcher

Website Credentials

Username birdwatcher

LOGOUT



**Let's create a local
community**

Imagine

• Bots: An introduction for developers

https://core.telegram.org/bots

Home FAQ Apps API Protocol Schema Twitter

Bots: An introduction for developers

Bots are third-party applications that run inside Telegram. Users can interact with bots by sending them messages, commands and [inline requests](#). You control your bots using HTTPS requests to our [Bot API](#).

1. What can I do with bots?

To name just a few things, you could use bots to:

- Get customized notifications and news.** A bot can act as a smart newspaper, sending you relevant content as soon as it's published.
- Integrate with other services.** A bot can enrich Telegram chats with content from external services.
- Gmail Bot, GIF bot, IMDB bot, Wiki bot, Music bot, Youtube bot, GitHubBot**
- Accept payments from Telegram users.** A bot can offer paid services or work as a virtual storefront. [Read more »](#)
- Demo Shop Bot, Demo Store**
- Create custom tools.** A bot may provide you with alerts, weather forecasts, translations, formatting or other services.
- Markdown bot, Sticker bot, Vote bot, Like bot**
- Build single- and multiplayer games.** A bot can offer rich [HTML5 experiences](#), from simple arcades and puzzles to 3D-shooters and real-time strategy games.
- GameBot, Game**
- Build social services.** A bot could connect people looking for conversation partners based on common interests or proximity.
- Do virtually anything else.** Except for dishes — bots are terrible at doing the dishes.

2. How do bots work?

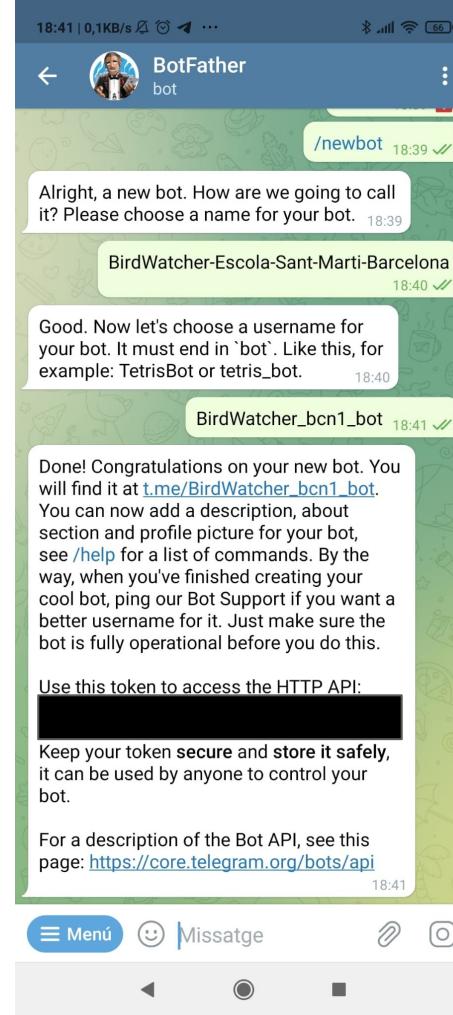
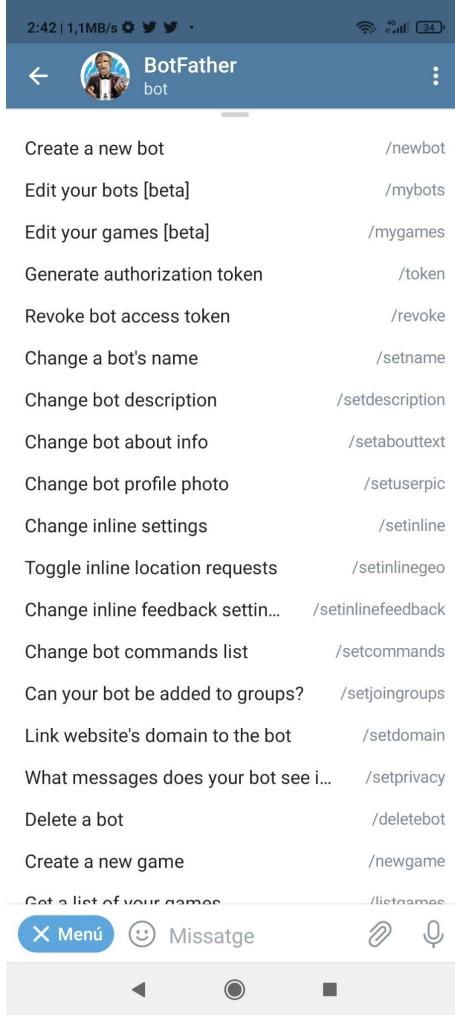
At the core, Telegram Bots are special accounts that do not require an additional phone number to set up. Users can interact with bots in two ways:

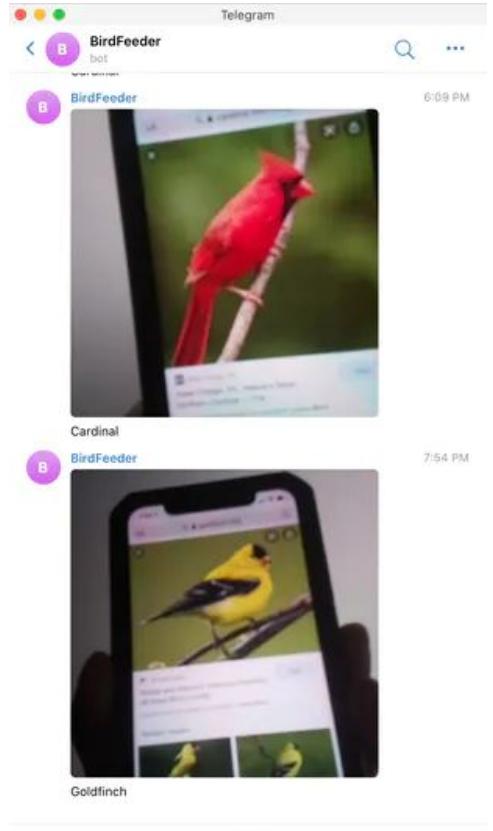
- Send messages and [commands](#) to bots by opening a chat with them or by adding them to groups.
- Send requests directly from the input field by typing the bot's @username and a query. This allows sending content from [inline bots](#) directly into any chat, group or channel.

Messages, commands and requests sent by users are passed to the software running on our servers. Our intermediary server handles all encryption and communication with the Telegram API for you. You communicate with this server via a simple HTTPS-interface that offers a simplified version of the Telegram API. We call that interface our [Bot API](#).

A detailed description of the Bot API is available on [this page](#) »







Start



Let's retrain the ML model

Imagine

Bird Watcher

birdwatcher.local

Bird Watcher Home Snaps Settings LOGOUT

Motion Detection

Enable motion to capture birds not classified by the ML model and retrain the system

[Update Motion Detection](#)

Telegram Notification

Telegram Chat ID

Telegram API key 1415420286:AAFK9eESCPbAU

[Update Telegram credentials](#)

Edge Impulse API Keys

Edge Impulse API key eI_52e9e2c16407b65bdct9965

[Update Edge Impulse API key](#)

Position your BirdWatcher or leave it 0, 0 if you want to stay private

Latitude 41.410

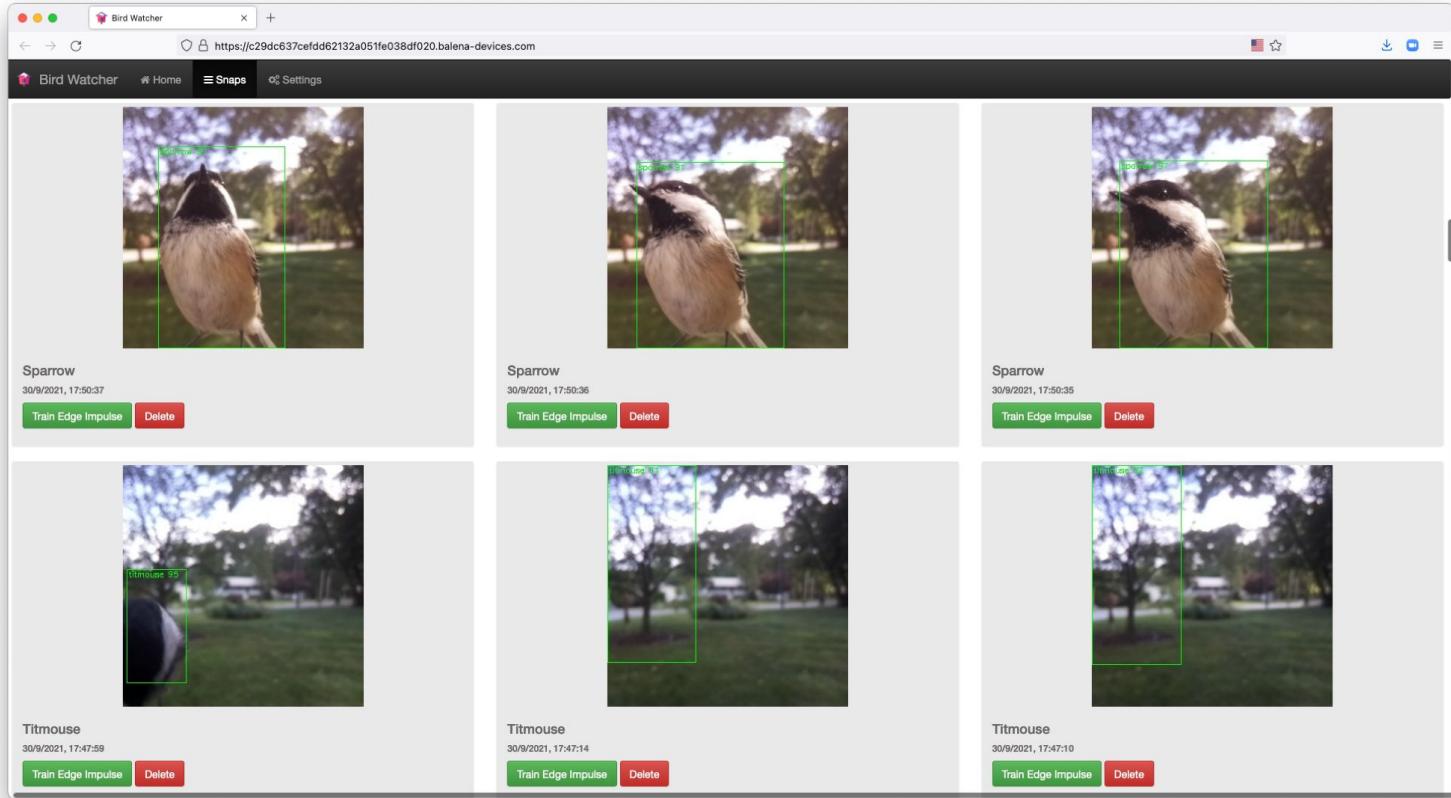
Longitude 2.226

[Geolocate your BirdWatcher](#)

Website Credentials

Username birdwatcher

49 Copyright © Edge Impulse Inc.



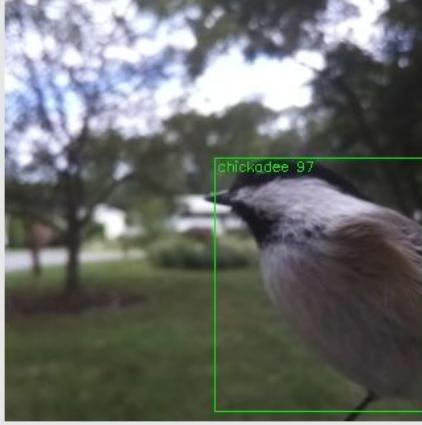


Titmouse

30/9/2021, 20:30:12

[Train Edge Impulse](#)

[Delete](#)

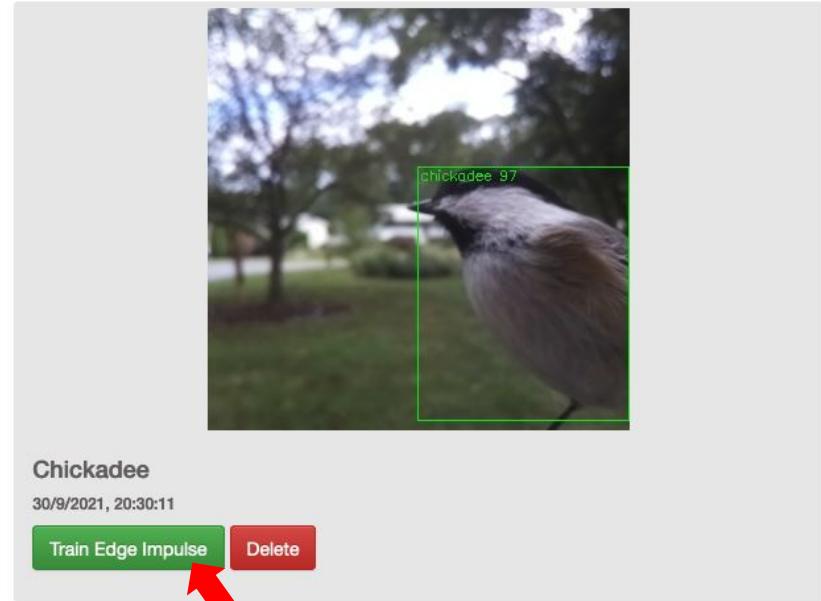
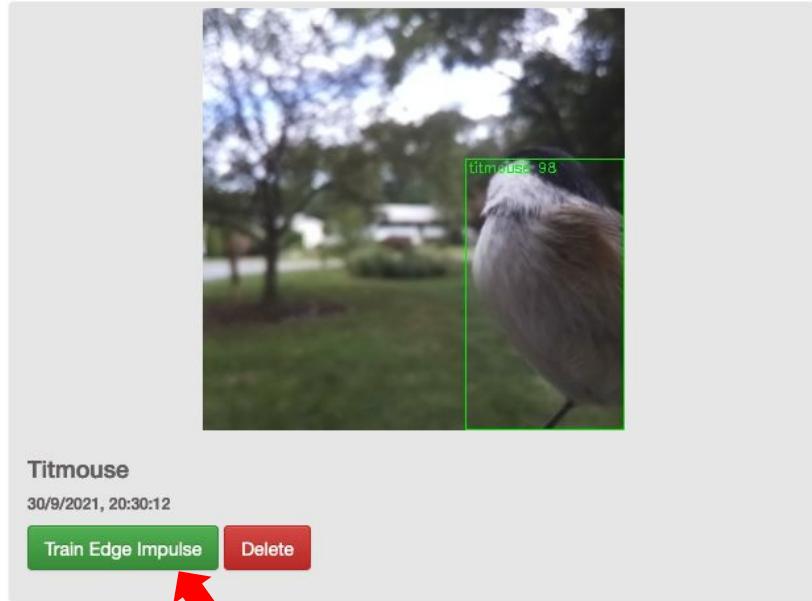


Chickadee

30/9/2021, 20:30:11

[Train Edge Impulse](#)

[Delete](#)



DATA ACQUISITION (BIRD-WATCHER-E)

Training data Test data Labeling queue (3)

Did you know? You can capture data from any device or development board, or upload your existing datasets - Show options

DATA COLLECTED
56 Items

TRAIN / TEST SPLIT
75% / 25%

Record new data

No devices connected to the remote management API.

RAW DATA

unlabeled.jpg.2gofhc52

Make your own
bird watcher
and inspire others!

Imagine

Contribute on the open source project!

<https://github.com/just4give/birdwatcher>

<https://just4give.github.io/birdwatcher>

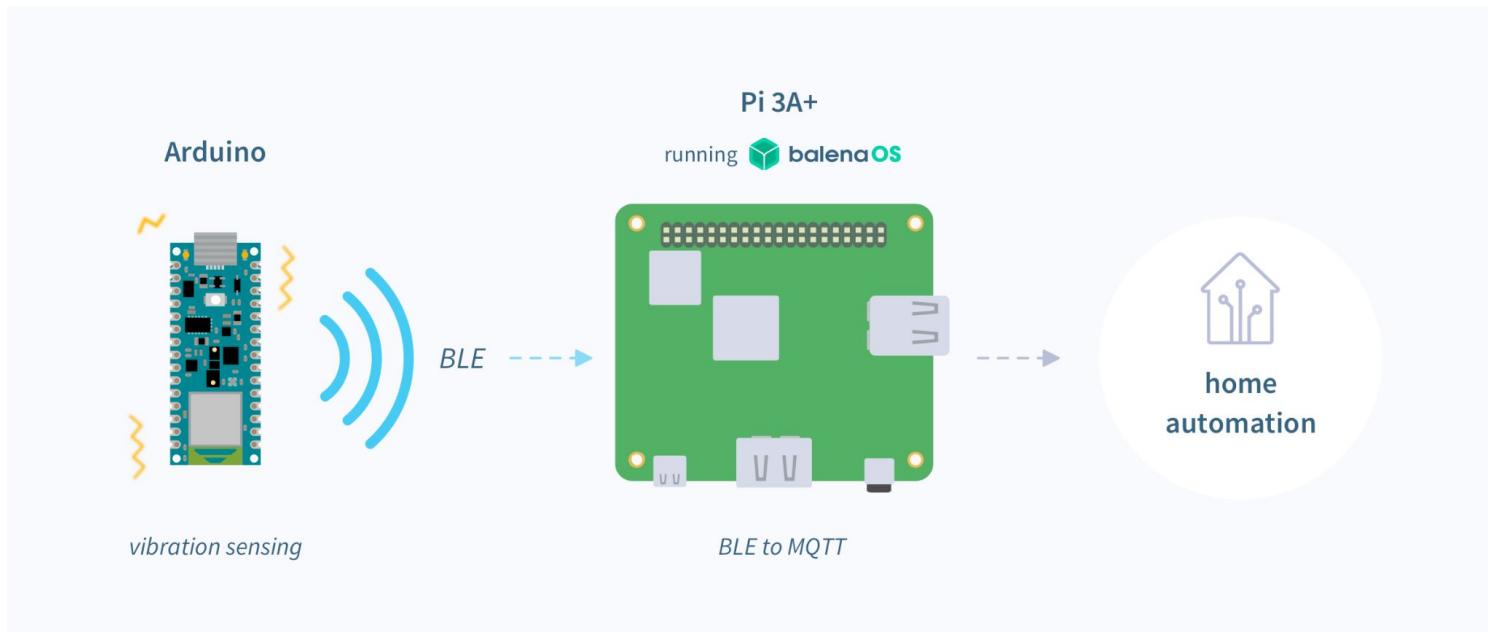


Take aways

- Learn about birds/nature around us and inspire others.
- Create your Edge AI fleet and update the software and ML model, the easy way.
- Contribute and retrain the model.



And more balena + Edge Impulse



<https://github.com/alanb128/balena-ble-gateway>

<https://www.balena.io/blog/how-to-use-ble-communicate-between-arduino-edge-impulse-balenaOS/>

Questions?



#2021Imagine

 **EDGE IMPULSE**
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