Explore through an educational lab the ways in which technology and nature can coexist!
A pair of smart devices installed at birdhouses or feeders are used, combined with a hidden camera and environmental sensors.
Each visit is recorded with photos, videos, and weather data, which can be viewed online in a short timeframe.
The initiative aims to promote urban biodiversity, support Birdgarden 2.0, and spread environmental education.

IQØOS

Amateur radio callsign of the
HAM Radio Club ARI Ostia

Discover how to install and configure a Birdgaren 2.0 device in your garden, on the balcony, or in the schoolyard, with which you can send images via radio in real time and capture them with your phone.

Educational proposal for a nature-based STEM workshop

BIRDGARDEN 2.0
RADIO MOD

OPEN SOURCE PROJECT

Il faro d'argento APS joins ILS and promotes the dissemination of Linux and free and open-source software

on the web site
https://webradiofaro.it/birdgarden
device installations are geolocalized, and a moderation mechanism allows only verified material to be published.

with the collaboration of

Associazione Radioamatori Italiani Sezione di Ostia

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335-6268088
www.ariostia.it

designed and created by

Il faro d'argento APS

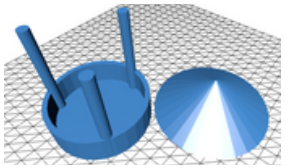
Via Umberto Giordano, 95
info@webradiofaro.it
331-7358446
www.webradiofaro.it

An interdisciplinary project, modifiable and adaptable

3D PRINTING

Through a simplified and guided path to 3D modeling, it will be possible to:

- Analyze the most common software and hardware
- Create prototypes of nests and feeders



TRASMISSIONI RADIO

Thanks to the amateur radio operators of ARI Ostia, a modification has been designed that allows the transmission via FM SSTV radio of the photographs collected by the Birdgarden 2.0 device.

SSTV is the image transmission mode used by the ISS, the International Space Station. During a single orbit pass, 2-3 complete images can be received.

ARTIFICIAL INTELLIGENCE

Discover Nature with the Raspberry Pi AI Camera!

- Let's understand how to use AI to interpret the content of an image.
- Record the birds' chirping to automatically determine their species.
- Explore how to train an artificial intelligence system.
- Discover autoencoder image representation

SOURCE CODE REPOSITORY AND INSTRUCTIONS

HTTPS://GITHUB.COM/IDAMATO/BIRDGARDEN

With a donation, you can adopt an installation that will bear your name.

If you are interested in this project, we can help you to make a proposal in your school. It is designed for kids aged 13 and up, join us in the world of makers and radio amateurs!

Basic index

a) Introduction to electronics, microcontrollers, and sensors

b) Introduction to coding and algorithms

c) Linux fFundamentals applied to the use of the Raspberry Pi

d) use of the camera and Python programming

Available mods

1) prototyping of the feeder for 3D printing

2) Wireless transmissions: WiFi, Mesh LoRa networks, and FM radio in SSTV

3) Let's use the Raspberry Pi AI Camera!

4) manage images with ASCII-cam

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n) **Propose your unique and original modification!**

The designed solution, thanks to the use of Mesh networks and radio transmissions, is also suitable for installation in environments without direct WiFi connections. Get in contact with the makers who contributed to the project and find the best solution suited to your needs.