



Citizen science tools and AI

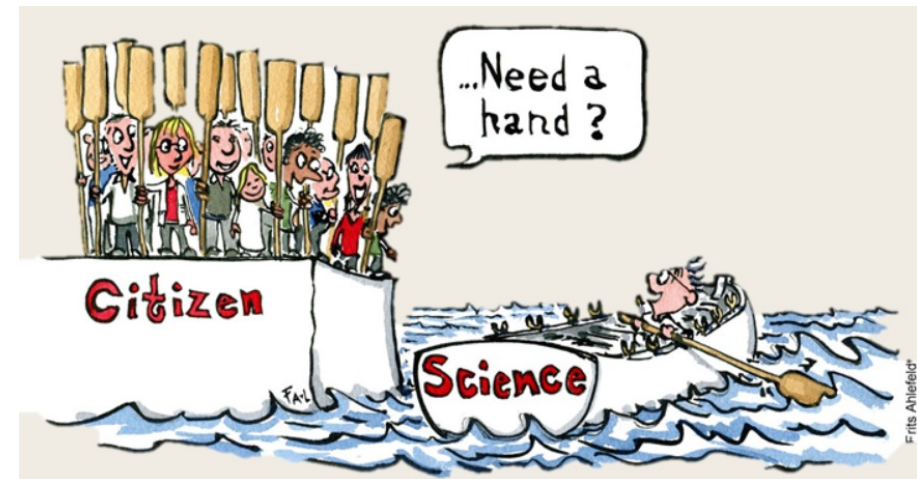
9 October 2023

Gitte Kragh



TIME4CS

SUPPORTING SUSTAINABLE
INSTITUTIONAL CHANGES
TO PROMOTE CITIZEN SCIENCE IN
SCIENCE AND TECHNOLOGY



The TIME4CS project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101006201



Citizen science tools and AI?

nature > news feature > article
 NEWS FEATURE | 23 October 2018
No PhDs needed: how citizen science is transforming research
 Projects that recruit the public are getting more ambitious and diverse, but the field faces some growing pains.



Aisling Irwin



iNaturalist's Blog / A new Computer Vision Model (v2.6) including 1,399 new taxa < Are Those Wasps...or Moths?... | An Interest in Geckos Durin... >

Summary
 Description
 Comments

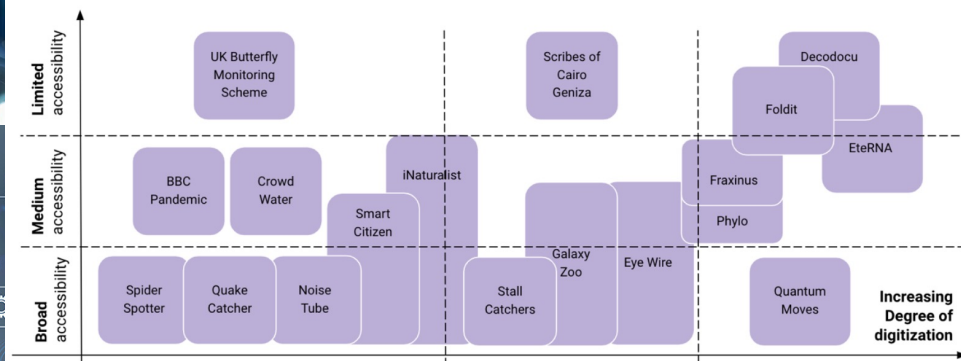
A new Computer Vision Model (v2.6) including 1,399 new taxa

We released a new computer vision model today. It has 78,387 taxa up from 77,276. This new model (v2.6) was trained on data exported last month on July 16th and added 1,399 new taxa.

Scaling Galaxy Zoo with Bayesian Neural Networks

J. Rafner et al. / Human Computation (2022) 9:1

Increasing participant requirements for scientific contribution



PHYSICAL TASK
 Involves a concrete physical task, not in the digital world
 Intelligent sensors/robotics

ANNOTATION TASK
 A purely digital challenge derived from a particular physical phenomenon (eg images)
 Supervised learning

OPTIMIZATION TASK
 A self contained, digital model exists.
 Reinforcement learning, optimization methods



THE ZOONIVERSE WORKS
771,523,814
 CLASSIFICATIONS SO FAR BY
 2,654,785 REGISTERED VOLUNTEERS



TIME4CS



GALAXY ZOO.org




"SDG monitoring"

Ecology

 iNaturalist

Health

 Eyewire

Cultural heritage



Citizen science

Archaeology

 DIME
Digitale Metaldetektorfund



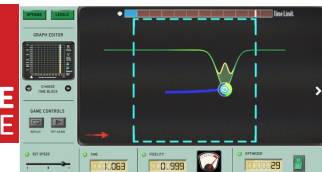
CCCBLAB
CULTURAL RESEARCH AND INNOVATION

Social science

Quantum physics

 SCIENCE AT HOME

Quantum Moves 2



Natural resource mgmt

Meteorology



PISUNA- Community-Based Monitoring to Management

Mon, 23 Jan 2017

In December 2016 the PISUNA project gathered Greenlandic stakeholders and international experts in Nuuk to share lessons

 CoCoRaHS

COMMUNITY COLLABORATIVE RAIN, HAIL & SNOW NETWORK
"Because every drop counts"

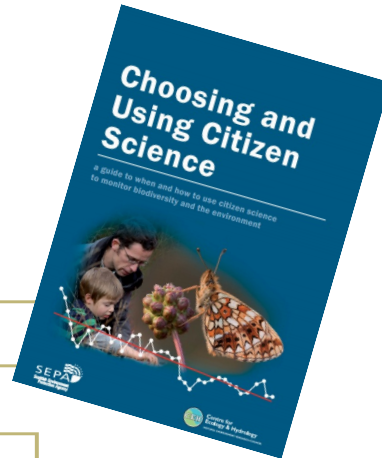
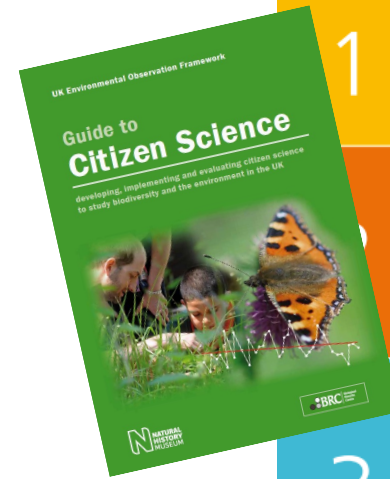
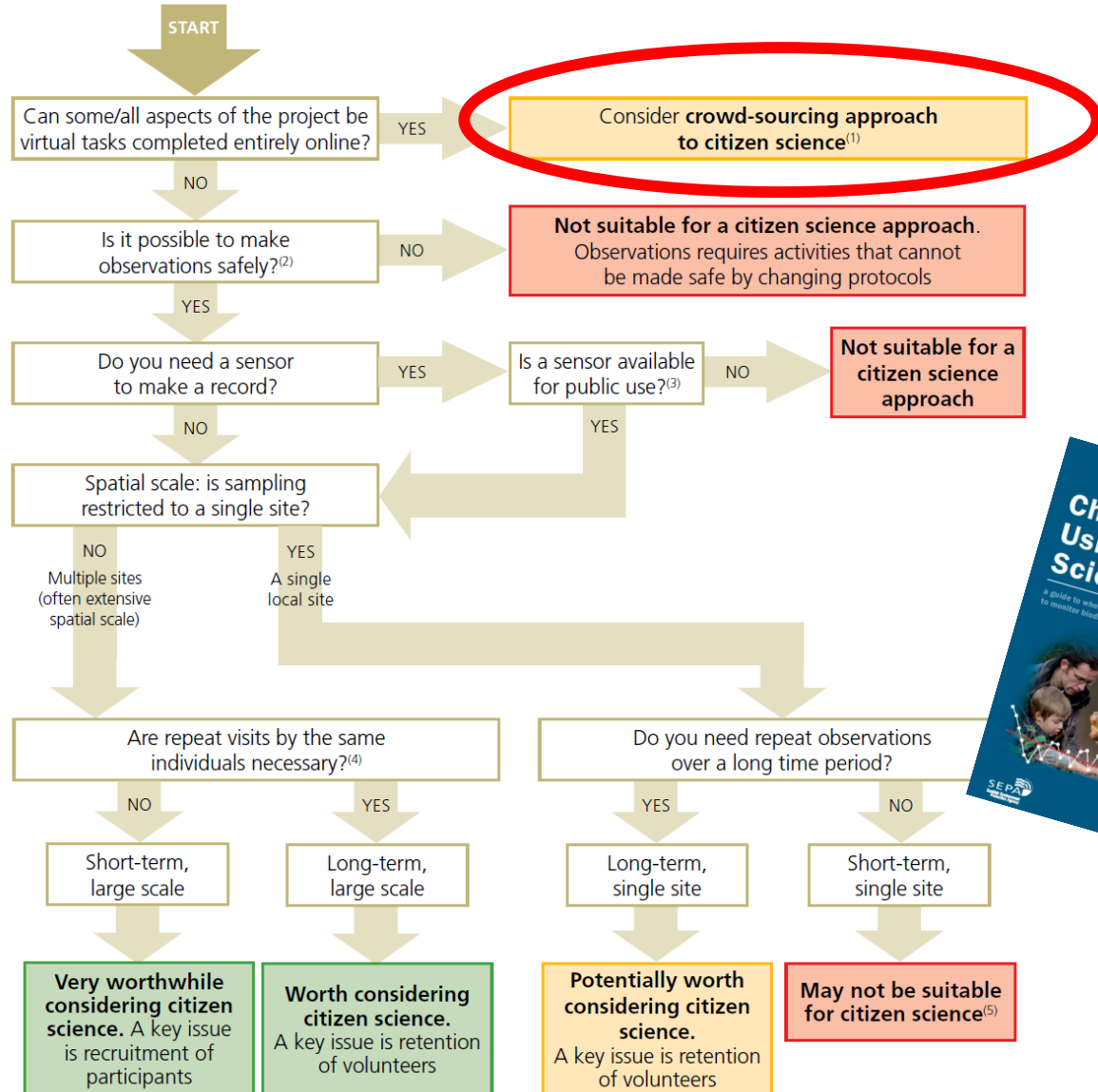
Home | Countries | States | View Data | Maps | My Data Entry | Login

Welcome to CoCoRaHS! "Volunteers working together to measure precipitation across the nations."

 TIME4CS

TIME4CS Deciding on using Citizen Science

Part 1 of the decision framework



1	Before you start	
	Is citizen science the best approach?	2
	Choose a citizen science approach	4
	Citizen science flowchart	6
2	First steps	
	Establish project team	7
	Define project aims	8
	Identify funding and resources	9
	Identify and understand target participants	10
3	Development phase	
	Design the survey or scheme	12
	Consider data requirements	14
	Consider technological requirements	16
	Develop supporting materials	17
	Test and modify protocols	19
4	Live phase	
	Promote and publicise the project	21
	Accept data and provide rapid feedback	22
5	Analysis and reporting phase	
	Plan and complete data analysis and interpretation	23
	Report results	24
	Share data and take action in response to data	25
	Evaluate to maximise lessons learned	26
	Resources and links	

Pocock et al. 2014: <https://www.ceh.ac.uk/citizen-science-best-practice-guide>

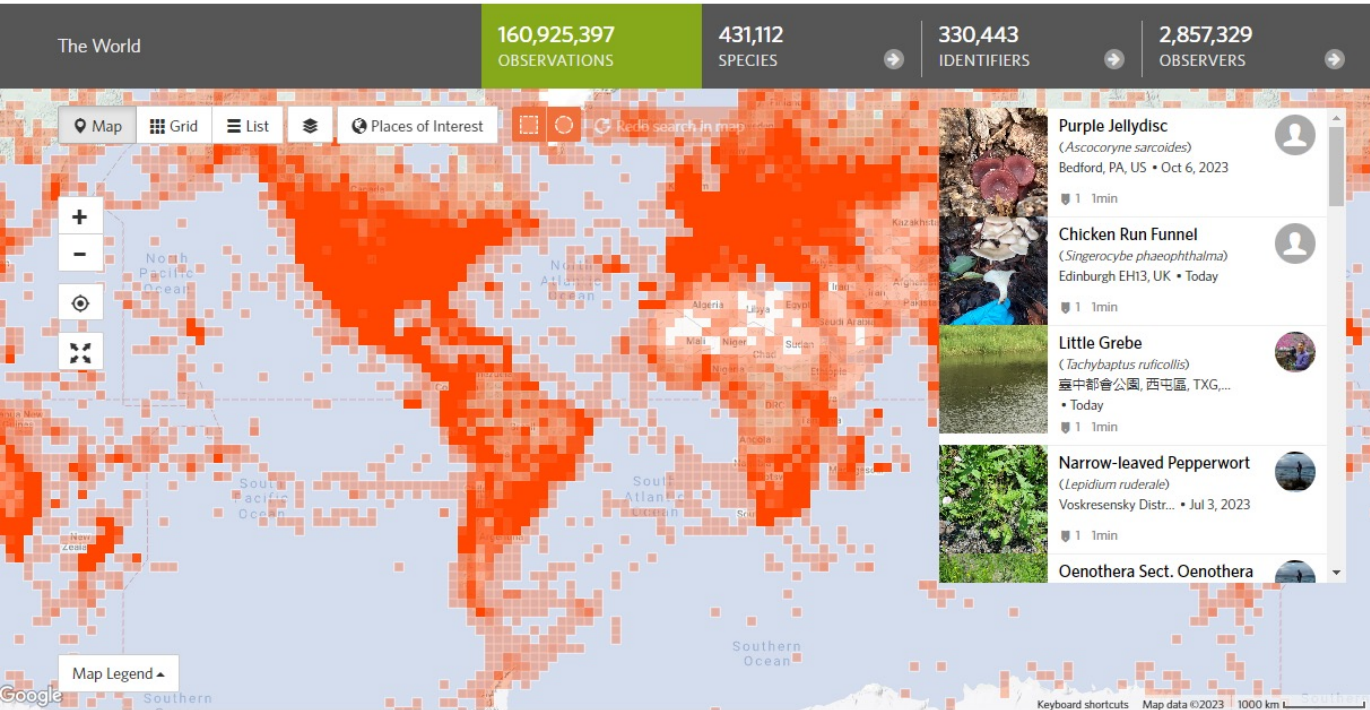
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TIME4CS iNaturalist

Observations

Species Location Go Filters



- Computer Image Model: updated monthly
- September 2023: 78,387 taxa



daniel_liepack added an identification to an observation by you Oct 3

Adder (*Vipera berus*)
kragen | May 31, 2023 | 5 Research Grade
90630 Oulu, Finland (Google, OSM)
View Observation

daniel_liepack added an identification Oct 3

Adder (*Vipera berus*)
View Observation Agree Show More...

nikibifrost added an identification to an observation by you Sep 27

Wild Marjoram (*Origanum vulgare*)
kragen | September 24, 2023 | 2 Research Grade
8940 Randers, Denmark (Google, OSM)
View Observation

nikibifrost added an identification Sep 27

Wild Marjoram (*Origanum vulgare*)
View Observation Agree Show More...

TIME4CS iNaturalist – City Nature Challenge

In 2022: 10% of all obs. from Luxembourg!



Nordic Agency for Development and Ecology



Ramborn Orchard Hiking 📍

1,123 OBSERVATIONS 300 SPECIES 211 IDENTIFIERS 108 OBSERVERS

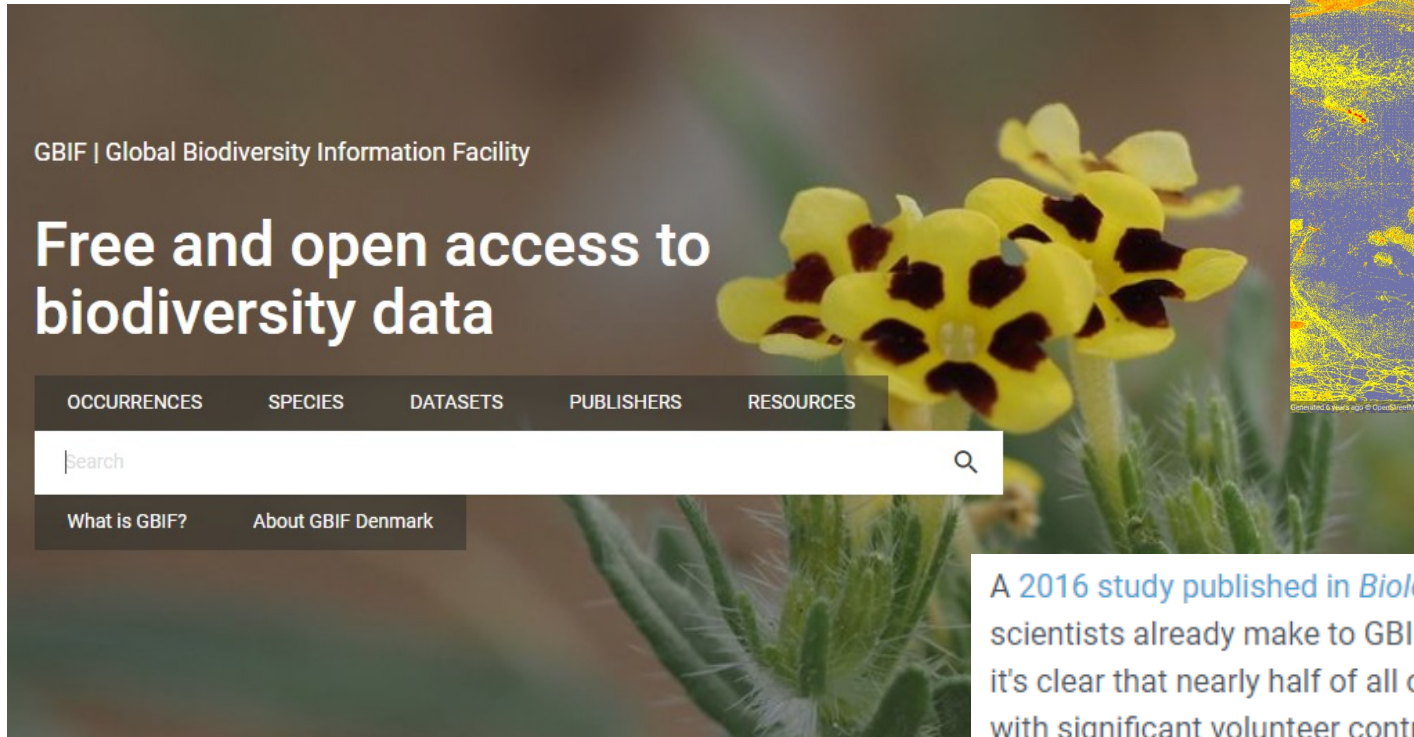
Map Grid List Places of Interest Redo search in map

Map view showing a satellite map of the Ramborn Orchard Hiking area. The map is overlaid with a grid and numerous colored pins representing observations. The area is bounded by an orange line. Labels on the map include 'GIRST', 'BOURSDORF', 'BORNI', 'LUXEMBOURG', and 'DEUTSCHLAND'. The map interface includes zoom in (+) and zoom out (-) buttons, a location pin icon, and a compass icon.

Species list:

- Egyptian Goose** (*Alopochen aegyptiaca*)
Natur-and Geopark... • Apr 30, 2023
Research Grade 2 5mo
- European Firebug** (*Pyrrhocoris apterus*)
Natur-and Geopark... • Apr 30, 2023
Research Grade 3 2 5mo
- Bees** (Epifamily Anthophila)
Natur-and Geopark... • Apr 30, 2023
1 5mo
- Oxeye Daisy** (*Leucanthemum vulgare*)
Born Rosport-Mompa... • Apr 30, 2023
1 5mo

TIME4CS Crowdsourcing of research: Biodiversity monitoring



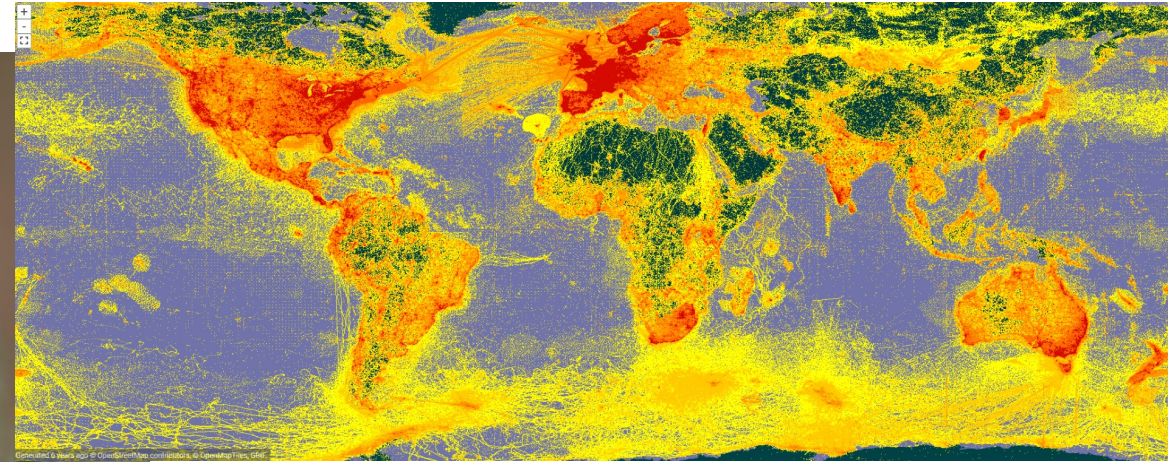
GBIF | Global Biodiversity Information Facility

Free and open access to biodiversity data

OCURRENCES SPECIES DATASETS PUBLISHERS RESOURCES

Search

What is GBIF? About GBIF Denmark



A 2016 study published in *Biological Conservation* registers the massive contributions that citizen scientists already make to GBIF-mediated data. Despite some limitations of the dataset-level analysis, it's clear that nearly half of all occurrence records shared through the GBIF network come from datasets with significant volunteer contributions.

GBIF—the Global Biodiversity Information Facility—is an international network and data infrastructure funded by the world's governments and aimed at providing anyone, anywhere, open access to data about all types of life on Earth.

The analysis also highlights the fact that biodiversity data from citizen scientists, like biodiversity data generally, are distributed unevenly across geography and taxa. Identifying data gaps and biases could help guide citizen programmes to focus on poorly sampled regions, like Africa, Asia and Latin America, and underrepresented organisms, like insects and fungi.

TIME4CS Zooniverse.org

THE ZOONIVERSE WORKS

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WELCOME TO THE ZOONIVERSE

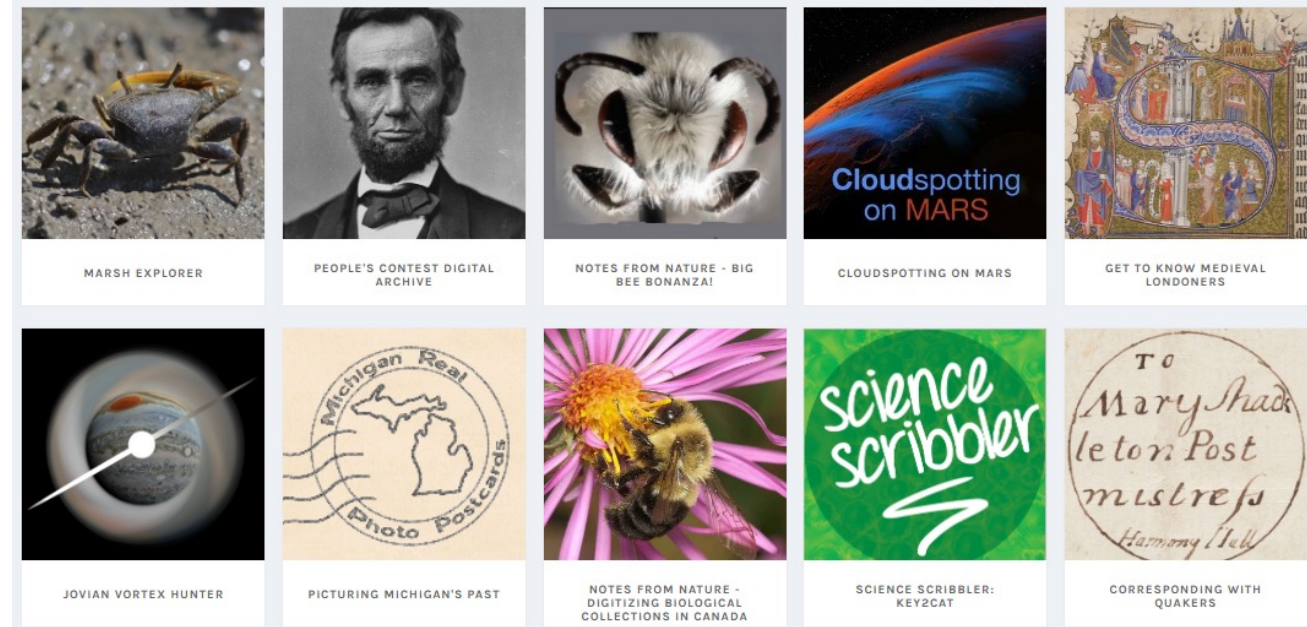
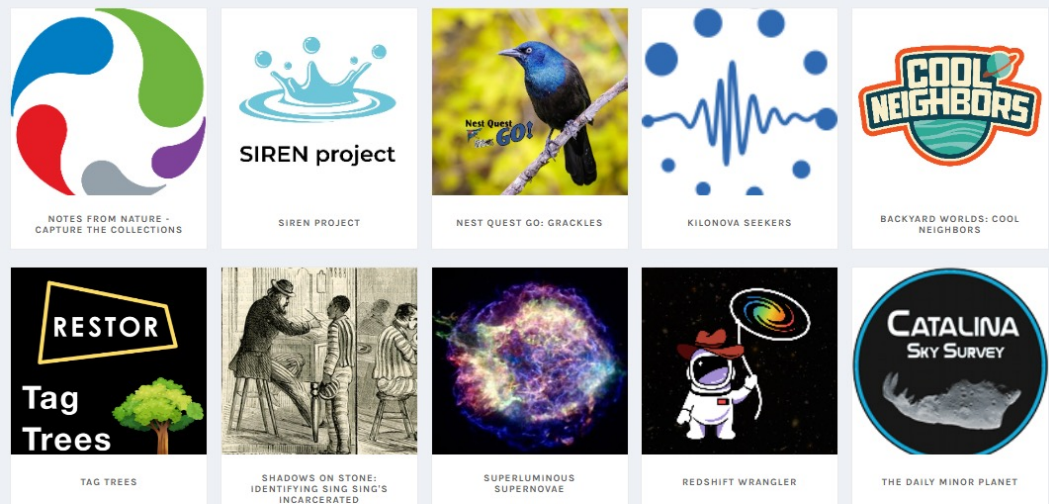
People-powered research

[See All Projects](#)



Most Recently Launched x v Showing 1-20 of 97 projects found. Name: x v

1 2 3 4 5

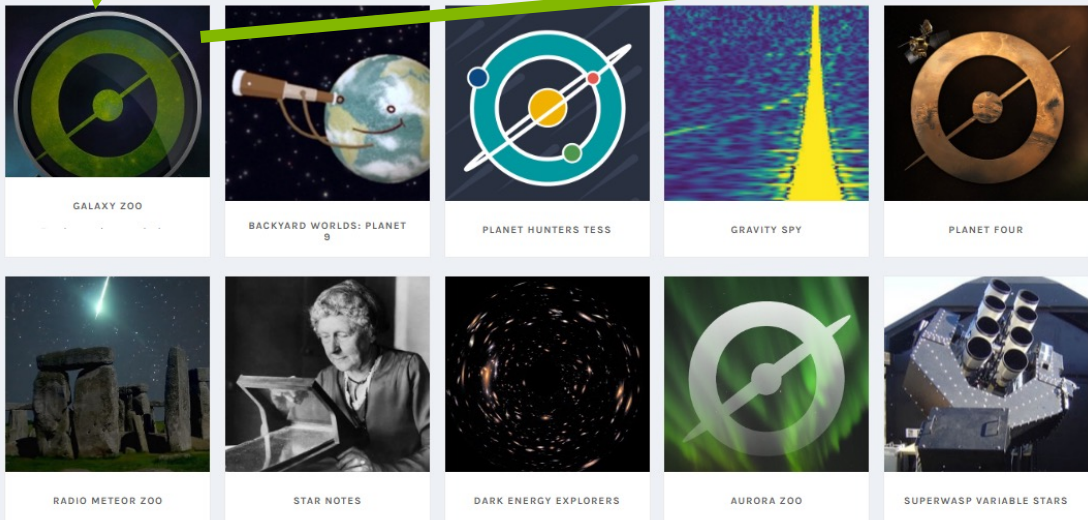


TIME4CS Zooniverse.org



WELCOME TO THE ZOONIVERSE People-powered research

See All Projects



AI identify challenging galaxies ->

Volunteers identify galaxies ->

AI trained on classifications

GALAXY ZOO STATISTICS

47% Complete

102,688

Volunteers

285,459

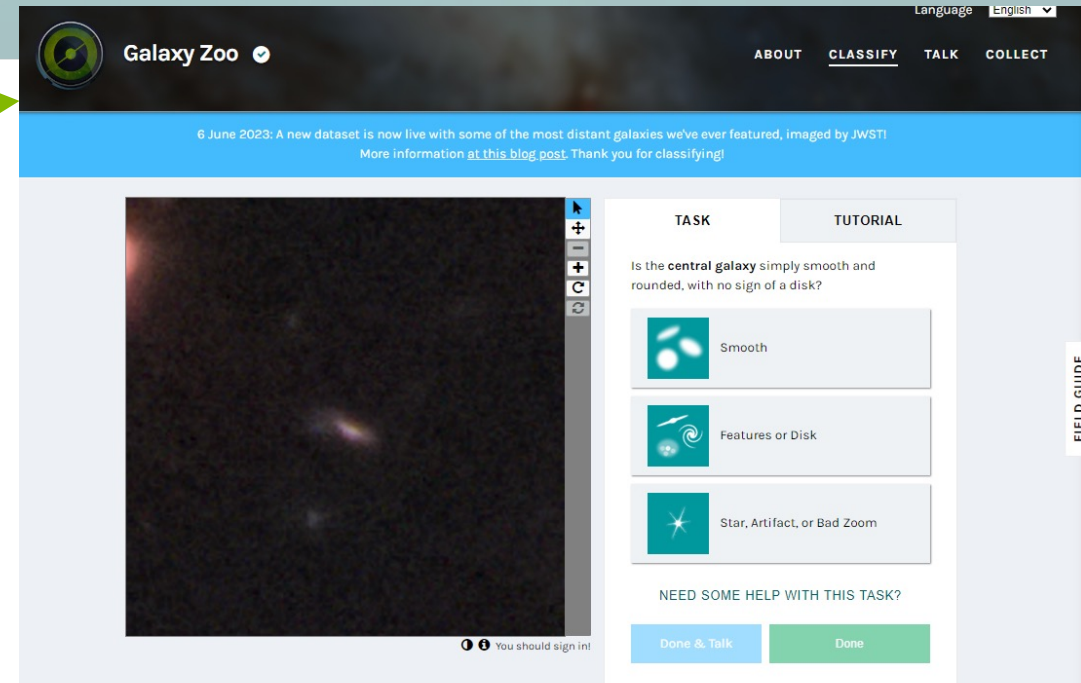
Classifications

7,679

Subjects

3,673

Completed Subjects



FIELD GUIDE

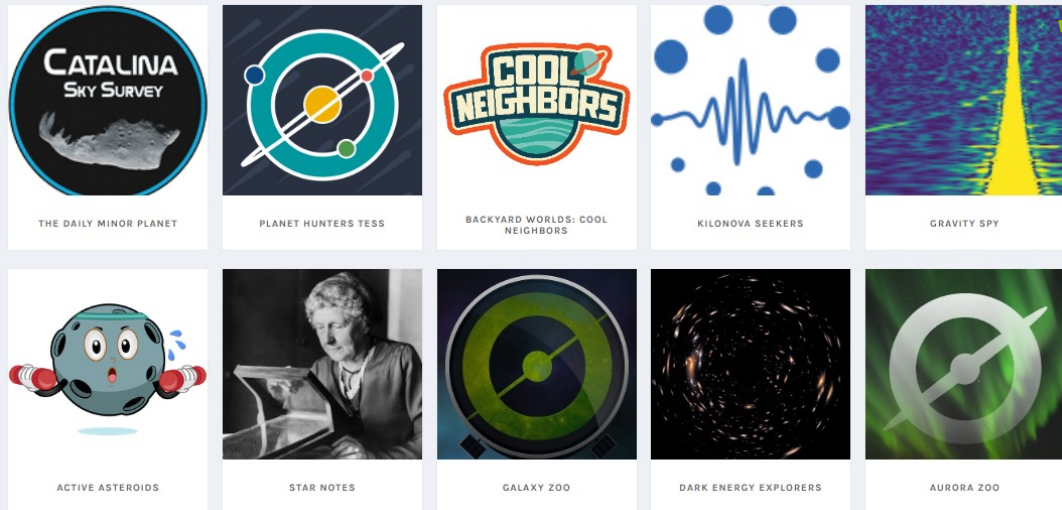
TIME4CS Zooniverse.org

WELCOME TO THE ZOONIVERSE People-powered research

See All Projects



Most Active x Name: x Showing 1-20 of 27 projects found.



AI used to train volunteers

54% -> 90% accuracy

Increased volunteer retention



Gravity Spy

ABOUT CLASSIFY TALK

By the numbers

32,980

Volunteers

1,592,276

Subjects

7,675,120

Classifications

347

Completed subjects

GRAVITY SPY

Help LIGO scientists make gravitational-wave discoveries by identifying how to improve our detectors

LEARN MORE

GET STARTED!

You can do real research by clicking to get started here!

UNLOCKED

0% COMPLETE
Neutron Star Mountain (Level 1)

LOCKED

0% COMPLETE
Galactic Supernova (Level 2)

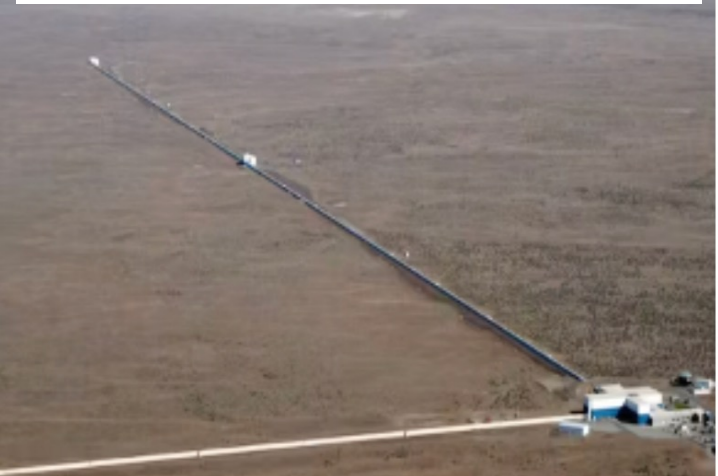
0% COMPLETE
Binary Neutron Star Merger (Level 3)

0% COMPLETE
Neutron Star-Black Hole Merger (Level 4)

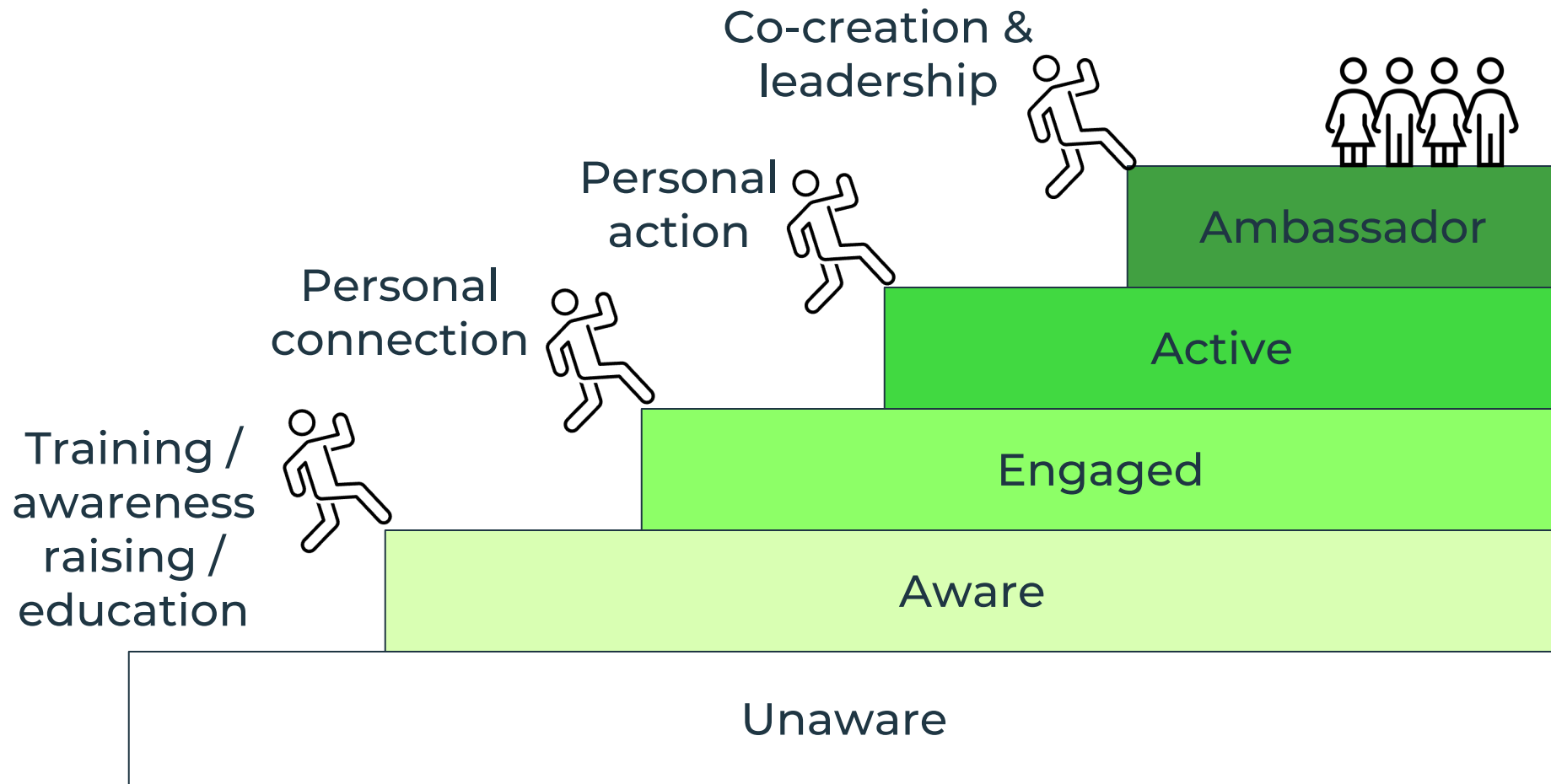
0% COMPLETE
Binary Black Hole Merger (Level 5)

0% COMPLETE
Inflationary Gravitational Waves (Level 6)

0% COMPLETE
Virgo




TIME4CS Ladder of Participation





 www.time4cs.eu

 time4cs@apre.it

#TIME4CS



Thank you for your attention !

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Any questions?

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