Agriculture

Meet the AI4Copernicus Projects
resulted from the Open Calls (by domain)

SCAVIHO

ENCORE LAB

Company: Encore Lab

Country: Spain

Industry: Industry and Agriculture 4.0

Vision: created to innovate, our origin and our path, looking for excellence and an advance with respect to what already exists

Mission: Develop Hardware, Software or Data Analysis technologies, aimed at creating excellent products and services that fully satisfy the needs detected

Values: Excellence, innovation, responsibility, flexibility, adaptation.

Achievements:

- AI4Copernicus Open Call Winner #

Problem

Normalized Difference Vegetation Index (NDVI) ranges from 0 to 1, its intermediate values are challenging to interpreter despite giving crucial information of the crop growing.

Solution

A real time tool to generate and rescale NVDI values from a specific plot so that intermediate values of growing stages in the crop can be understood

AI Service(s)

Phenological Stage model

NVDI polynomial curve model

Tool for real time NVDI generation and rescaling

AI model for predict harvest day

Innovative Aspects

- New approach to utilizing the NDVI index during the growing stages of the crop
- Flexibility in data integration on real time
- Integration of Artificial Intelligence (AI) to model PI, NVDI and harvesting

Target Market(s)

Agriculture crops in Spain and Portugal, so far clients on grapevines, pear, almond, persimmon, fig, etc.

Competitors

- Innovative and disruptive companies in Agriculture 4.0

Business Model

B2C – Business to consumer. We develop solutions to client, either on demand or through innovative projects for commercialization

Targets

- Expand our product across Europe
- Increasing the type and area of crops monitoring

Contact us!

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Sen4Weeds

Companies:
DigiFarm/ALTYN

Countries:
Norway/Switzerland

Industry: Precision Agriculture

Vision: To be leading provider of large-scale environmental and agronomic intelligence

Mission: To provide large-scale detection and mapping of weed in agricultural fields

Values: Precision and reliability

Achievements:
- AI4Copernicus Open Call Winner #
- 42 commercial clients
- 10 mil. sq.km per month

Problem

In the US alone weed loss results in $33 bill. in lost crop production/year. Overall weed-related yield loss in grains worldwide estimated at 10%, i.e. 200 m. tonnes.

Solution

Automatic large-scale weed-detection using AI and super-resolution SatEO

AI Service(s)

- x10 super-resolved Sentinel-2 from 10m to 1m per pixel (10-bands)
- Automatically delineated field boundaries and seeded acres at 1m per pixel resolution
- Precise and accurate detection of weed infestations

Innovative Aspects

- Unique and novel 10-band 10x single-image super-resolution model for Sentinel-2
- Powerful and precise vegetation classification methodology

Target Market(s)

Large industrial ag producers, ag machinery and agrochemical companies globally

Competitors

A number of local drone-based service-providers exist, but no scalable solutions

Business Model

B2B: Large-scale automated weed monitoring services through Web interface and API

Targets

10 mil. sq.km in systematically monitored agricultural land
10 mil. Euro in annual revenue

Contact us!

Email: ya@gamma.earth   Website: www.digifarm.io

ESFA

Company: GEOSKOP

Country: Spain

Industry: Climate Intelligence

Vision: To be a global climate research entity at the forefront of long-range forecast

Mission: To provide Climate Intelligence to the industry promoting effective Climate Adaptation

Values: Commitment, persistence, excellence

Achievements:

- AI4Copernicus Open Call Winner #3

- ESA BIC Incubation

- Funding from Spanish Min. of Science & Innovation

Problem

Agricultural production has been increasingly exposed to unfavorable climate events and extremes in the last decades, leading to losses of half trillion € across Europe

Solution

A new generation of Seasonal Forecast based on S2S Copernicus systems, ERA5 (scientific evidence), and the most disruptive AI algorithms

AI Service(s)

Data as a Service (DaaS) w/ proprietary backend based in AI
- Forecasts up to 6 months ahead of Total Precipitation and Surface Temperature
- Delivered as data to be incorporated in clients' Crop Models

Innovative Aspects

- Next generation of Seasonal Forecast build on top of different AI hypermodels mixture

- Generation of proprietary pretrained models

Target Market(s)

Global market, focused on staple crops

Incorporating it to energy market (Geoskop's beachhead)

Competitors

- **Climate AI** – USA ($38.2M raised)
- **WeatherTrends360** – USA ($6M raised)
- **Salient Predictions** – USA ($5.4M raised)

Business Model

B2B. Initially for small farmers, after some Market Discovery, moved to large traders

Targets

- Traders

- Large farming companies

Contact us!

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https://geoskop.tech

PLANET

neuralio

Company: **Neuralio A.I.**

Country: **Greece**

Industry: Agriculture

Vision: Innovating the Future with End-to-End AI Solutions for the Climate, Energy and Financial Sectors.

Mission: Our mission is to leverage the power of Artificial Intelligence to help our clients navigate complex data landscapes, streamline operations, and drive sustainable growth.

Values: Excellence, innovation, integrity, collaboration, sustainability, customer-centricity

Achievements:

- AI4Copernicus Open Call Winner

Problem

Climate change presents a significant threat to global agricultural productivity, with complex, dynamic responses to weather shocks and climatic shifts differing over time and across regions.

Solution

PLANET is an intelligent tool using Artificial Intelligence and earth observation data, offering a hyperlocal, on-demand climate-driven crop suitability service.

AI Service(s)

⊛ Generative Adversarial Networks for downscaling weather information

⊛ LSTM network for yield prediction

⊛ 3 Layer Neural Network for classification

Innovative Aspects

⊛ Hyperlocal Weather

⊛ AI-Powered Crop Suitability Analysis

⊛ Integration of Multiple Data Sources

Target Market(s)

⊛ Farmers and Agricultural Producers;   ⊛ Agri Consultants and Advisors;
⊛ Seed and Agribusiness Companies;   ⊛ Agri-Insurance Companies;
⊛ Government Agencies and Policy Makers;

Competitors

No direct competitors; Indirect ones (providing complimentary data) include: ⊛ Climate FieldView; ⊛AgroClimate by the Uni Florida ⊛ METER Group

Business Model

Planet will be offered both through SaaS and DaaS; Depending on the final end-user/customer 2 main packages will be offered:
⊛ Bundle, addressing the need for large-area analytics.
⊛ Individual, addressing the need for single/individual service provision.

Targets

⊛ Establish business partnerships with at least 2 public agencies, 5 Agri-Insurance companies & More than 15 Cooperatives and 10 Agri-Consultants.
⊛ Integrate Planet platform with decentralized WEB3 technologies to offer Smart Contracts and Climate Crypto currency

Contact us!   info@neuralio.ai   https://neuralio.ai/

OPTIMAL

OPTIMAL

Company(ies): Xilbi Sistemas de Informacion SL

Country(ies): Spain

Industry: ICT

Vision: be the leading provider of AI-driven solutions in agriculture

Mission: revolutionize agriculture through AI, optimizing irrigation for sustainable and efficient farming

Values: Excellence, innovation

Achievements:

- AI4Copernicus Open Call Winner

- Copernicus Masters 2022 - Hesse Prize - 2 place

Problem

Water scarcity is threatening agricultural irrigation, demanding more sustainable water management methods.

Solution

OPTIMAL – cOPernicus based irrigaTION mAnagement tooLkit - integrating AI with Copernicus satellite, onsite sensor data, and meteorological forecasts, towards mitigating the impact of water scarcity

AI Service(s)

The AI service will use Copernicus satellite and onsite sensor data to monitor field conditions, coupled with meteorological forecasts to devise precise irrigation strategies, enhancing water efficiency and mitigating scarcity in agriculture.

Innovative Aspects

- Business Model (community based)

- AI based using multiple input sources including ground sensors, meteorological forecast and Copernicus data

Target Market(s)

Agriculture

Competitors

Prospera Technologies Ltd. (Israel), OnFarm (USA), Bosch Plantect (Japan)

Business Model

Software as a Service (SaaS) B2B or B2B2B models, offering subscriptions based on farm size and additional features. Data analytics and consulting will be provided for larger clients.

Targets

- 3.2 Million Euros of turnover until 2028
- 20 new job positions until 2028

Contact us!

Website: https://www.xilbi.com/

FERTIREC

Company:

Spacenus GmbH

Country:

Germany

Industry:

Agriculture & Environment

Vision:

Enabling sustainable food production.

Mission:

Providing scalable data on plant and soil health.

Values:

Scalable solution provider.

Achievements:
Released, a novel district-based N rate Rx for the EU's four major crops.

Problem

Farmers need cost-effective nitrogen (N) rate recommendations (Rx) in order to make better fertilisation decisions and comply with regulations while maintaining production.

Solution

We provide district-based N rate Rx, allowing farmers and consultants to better understand plants' needs without relying on time-consuming soil tests or costly field sensors.

AI Service(s)

To achieve Nitrogen deploy Efficiency (NUE) of more than 80%, we utilise AI Models that can transform satellite data into plant-need based N fertiliser estimations and generate district level (NUTS3) N rate Rx.

Innovative Aspects

Plant N deficiencies assessment requires soil or plant lab testing, which is time consuming and expensive. We use satellite imagery to do the same thing, so our approach is region-tailored yet very scalable.

Target Market(s)

Europe (EU and UK)

Competitors

Atfarm and Adprt-N by YARA and Onesoil.

Business Model

The end user of our services are farmers but we offer our API services to Agribusinesses, who have farmers as their customers and change per request.

Targets

Currently, we only offer N Rx at the district level, but we also intend to offer P2O5 and K2O Rx at the post-code level across Europe.

Contact us!

Email: info@spacenus.com

Website: https://www.spacenus.com

LIVE4ENV

**digitanimal**

Country: Spain

Industry: AgTech

Vision: To revolutionize the livestock sector by harnessing technology and innovation, empowering farmers to drive sustainable growth and create a positive societal impact.

Mission: To deliver cutting-edge solutions that enhance productivity, sustainability and animal welfare.

Values: Excellence, innovation, sustainability, collaboration & customer-centricity.
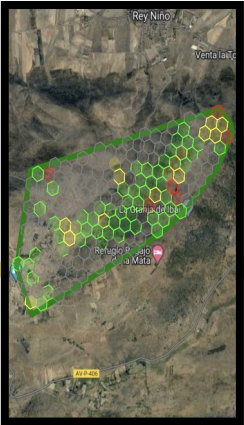
Achievements:

- AI4Copernicus 3rd Open Call Winner

Problem

CO2

CH4
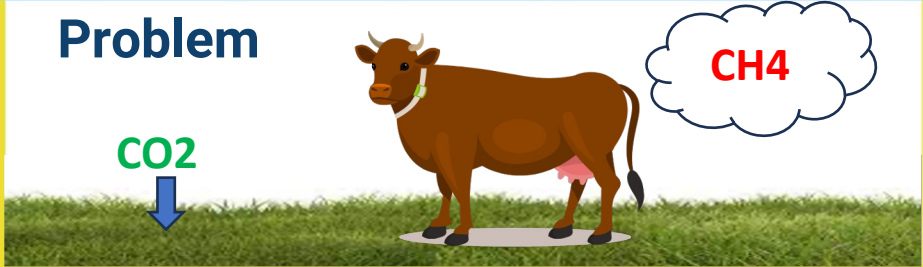
Solution

Decision Support System

GPS Trackers
S1&S2 imagery
Weather data
Elevation data

AI Service(s)

- Land-cover classification multitemporal approach
  OUTPUT: Pasture vs Trees vs Non-productive

- Rule-based learning based on VIs and GPS data
  OUTPUT: Management recommendations for farmers

Innovative Aspects

- Data integration

- Novelty in the livestock sector

- Combining data & expert knowledge

- Sustainability assessment

Target Market(s)

Livestock sector: farmers, advisors & public bodies

Competitors

ruumi

Pasture.io

Business Model

B2C – Farmers

B2B – Advisors & Public Bodies

Targets

- 20k B2C users and 1k B2B users in 3-5 years

- Integrate C credits

Contact us! ✉ dvarona@digitanimal.es 💻 https://digitanimal.com/

AI4 E2O.GREEN

Company(ies): **3D EMS, List Labs, Profida**

Country: Croatia

Industry: Agriculture

Vision: To bridge the gap from Earth Observation 2 Green space Energy Optimization in order to foster the rise of climate-neutral cities.

Mission: To provide the next-gen AI, IoT and Remote Sensing consumer solutions for sustainable Golf and Green Space Management to every Golf and Green Space in the EU and beyond.

Values: Innovation and sustainability.

Achievements:
- AI4Copernicus Open Call Winner #
- myEUspace competition winners

Problem

Lack of updated AI powered technology for green space management leads to inefficient management. significant cost of energy, and urban overheating.

Solution

Intelligent Platform powered by AI, EO and IoT to enable Golf Course and Urban Green Space Management companies to effectively manage assets operations and land fields.

AI Service(s)

Automated AI, Computer Vision and remote sensing based recording, evaluation, analysis and graphical display of Golf Urban Green Spaces for increased efficiency and smart management.

Innovative Aspects

- Change detection models for irrigation and grassland mowing
- Green space condition and disease detection visual recognition models
- AI powered geolocation aware AR model for Predicting Grassland Diseases

Target Market(s)

EO Value-Added Services for Golf, Urban Green Space, Energy and Maintenance Management. Combined market potential of 15B+€ in the EU and beyond.

Competitors

- Golf industry smart management companies
- Precision agro, map service, GIS competition

Business Model

Smart, simple and fair standardize and re-sell B2B and B2G business model, with a 10% success fee based on 30% energy savings achieved by the client.

Targets

- Product market fit and build atomic network
- Capture 30% of 60M+ EUR SOM market of 1K+ clubs or smart cities in the EU

Contact us!

Mail: golf@3d-ems.com   Website: e2o.green

THRUST-4RESST

THRUST
INTELLIGENT UAV SYSTEMS

Company: THRUST – Intelligent UAV Systems (AeroDiagnostika Ltd.)

Country: Lithuania

Industry: Forestry

Vision: To be the safest, greenest, most versatile multi-scale remote sensing and analytics provider.

Mission: To provide versatile aerial inspection and diagnostics solutions to maximize decision-making effectiveness in different sectors.

Values: Versatility, effectiveness, reliability

Achievements: I-NERGY, ELISE, RIMA, Women TechEU, H2020 projects

Problem

Forestry sector suffers from inefficient control processes, caused by current technologies lacking the ability to provide large-scale, high- resolution data at high refresh frequency

Solution

THRUST-4RESST aims to bridge the gap between high-resolution, low-frequency aerial data and low-resolution, high-frequency satellite data to create a decision support system for foresters.

AI Services

Multifunctional AI-aided forest condition assessment tool that identifies: 1) clear-felling areas and windfall, 2) tree stress (both biotic and abiotic), 3) flooded, waterlogged areas; 4) monitors unaccounted natural forest reserves (including seedlings, saplings) to prevent premature felling.

Innovative Aspects

- Multifunctionality: different types of forest conditions are analyzed
- Multi-scale solution: satellite, manned & unmanned aviation technologies used
- Multi-sensor solution: MSI, SAR, LiDAR

Target Market

Private and public forestry sector first at a national, then European, and global level

Competitors

- Forest inventory based on manual inspections, either UAV or satellite data

Business Model

Aerial inspection and analytics service provision for private forest owners, businesses, and national forest management institutions (B2B, B2G)

Targets

- Launch regional multiservice platform;
- Enter private and public segments in at least 5 countries in EEA.

Contact us!

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AI-quaFarm

AI-quaFarm

Company: Heuristic Data

Country: Greece

Industry: Digital Services

Vision: To be carrier of cutting-edge technology that revolutionise businesses and society.

Mission: To deliver intelligent solutions, driving growth and efficiency in the digital era.

Values: Teamwork, Innovation, Excellence, Empowerment

Achievements:

- AI4Copernicus Open Call Winner #5

Problem

- Fish farms' operation generates significant waste
- Poor planning & siting is one of the main causes
- Impacts on the environment & production problems
- Significant costs at evaluating optimal sites

Solution

Use AI tools for evaluating & selecting optimal locations for new sites
- Collect and pre-process satellite products -> High quality images
- AI models to identify important characteristics of the location
- Integrate fine-grained air-quality data
- Semantic enrichment of data for complex querying and linking

AI Service(s)

- We offer services to support the decision makers in aquaculture
- Creating models for fish growth monitoring and prediction based on multiple parameters
- New service for evaluating & selecting optimal locations for the installation of new aquaculture sites
- Consider environmental parameters & location characteristics (physics, waves, biochemistry, weather, bathymetry, protected areas)

Innovative Aspects

- Enrich our services with additional parameters
- Utilise higher quality satellite products
- Automate major part of the process using AI classifiers
- Integrate air-quality data of finer resolution in our analysis
- Analyse large volume of historical data in a time-efficient manner (before getting in-situ measurements)

Target Market(s)

Domain: Aquaculture Industry

Location: Greece > Europe > Globe

Competitors

IT companies offering digital services for the aquaculture industry

Business Model

B2B & B2B2B
- Direct business customers
- Indirect business customers via partnerships

Targets

- Enrich the collection of our services
- Enhance our position in Greece's market
- Expand to other markets

Contact us!

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FLORA4Cop

3Bee
a world with bees

Company: **3Bee**

Country: **Italy**

Industry: **Climate tech**

Vision: We connect nature with technology enabling the protection of biodiversity with a sustainable model.

Mission: We are the climate tech company that protects biodiversity. We are the technology solutions that help safeguard pollinators, plants and life on earth.

Values: Biodiversity preservation, nature, sustainability

Achievements:

- AI4Copernicus Open Call Winner

- Horizon 2020 SME instrument phase I and II

- ESA demonstration voucher

- H2020 VIDA voucher

- Several Italian national grants

Problem

We aim to use AI4C services for **enhancing our tool FLORA**, which is an **earth observation application** for terrestrial **biodiversity mapping**. FLORA is an innovative and quantitative method to define changes in biodiversity in a precise, scalable and continuous way.

Solution

We aim to **improve our algorithm training model** and **make use of a time series database of Sentinel 2 data in the case of crop fields**. We are interested in these AI4C services:
- "Deep network for pixel-level classification of S2 patches"
- "TimeSen2Crop"

AI Service(s)

Deep network for pixel-level classification of S2 patches.. This service would help us better define the quality and quantity of training data available. Once the classifier is trained, it can be used to analyze Sentinel 2 images, identify land cover in a given territory of our interest, and integrate these innovative features to strengthen our biodiversity study
TimeSen2Crop. By using the tool, we can better understand how other services based on Sentinel-2 data work, opening new opportunities for the development of new products and services based on Sentinel-2 data.

Innovative Aspects

Flora uses satellite data to map flora biodiversity in the area of interest. The data processing goes through several steps to obtain accurate and detailed results.

By applying cleaning and computational methods that optimize the temporal sampling, precision, and cleanliness of the data itself, we can obtain precise, accurate, and consistent satellite images over time.

Target Market(s)

Companies of all sizes that need to improve ESG improvement scores for compliance, marketing, human resources and product certification reasons (Biodiversity Index Report).

Competitors

- Beeodiversity

- UBees

Business Model

3Bee operates primarily through a B2B business model, specializing in the sale of biodiversity monitoring, mitigation and assessment projects.

Targets

To consolidate 3Bee's innovative services to become Europe's leading reference for land monitoring and regeneration services

Contact us!

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