European Commission

EU RESEARCH AND INNOVATION PROJECTS IN ARTIFICIAL INTELLIGENCE

GREENING

April 2021

The Commission is proposing rules to ensure AI technology is trustworthy and a set of actions to boost AI excellence and strengthen Europe's leading position in the development of human-centric, sustainable, secure and inclusive AI. The Commission will continue to fund AI-projects that benefits people, businesses and governments.

Some examples of EU-funded research and innovation projects using Artificial Intelligence in 'Greening'.

SMART SENSORS WILL HELP FEED GROWING WORLD POPULATIONS

Global population is rising fast – by 2050, it is projected to reach 9.8 billion, meaning the world will need to almost double its food production to feed its people. At the same time, agriculture is facing tough challenges including climate change, environmental concerns and land-use pressure. The ANTARES project is developing smart sensor and big data technologies that could help farmers produce more food in a way that is sustainable for society, farm incomes and the environment. A farmer with a 5 000-hectare farm can save €1 to 1.5 million just by planting the right crops in the right place using the project's algorithms and the farm's environmental footprint can be reduced through 'precision agriculture'.

EU contribution: € 14 000 000

HELPING EMERGING ENERGY MARKET PLAYERS MAKE THE RIGHT CALLS

The EU wants to develop a pan-European energy market, where providers freely compete and provide the best energy prices while helping Europe fully achieve its renewable energy potential. The ADAPT project has created a decision support system to help new players with their negotiations. Its system assists users as they plan their entry into the electricity market and with the actual negotiation process. The large power provider, ENGIE, is involved in validating the results to ensure the project's models work in the market environment.

EU contribution: € 170 000

Research and Innovation

MIDDLEWARE SYSTEM UTILISES AI TO COORDINATE BUILDING ENERGY MANAGEMENT

What if a building isn't as energy efficient as it should be? The **HIT2GAP project** developed a new building energy management platform that takes the complicating factors into account to reduce the performance gap. The system, which includes modules that are based on AI algorithms and techniques such as data mining and Knowledge Discovery, focuses on the operational phase of a building's life, meaning the long period after construction and before decommissioning where tenants occupy the building. The project developed a new paradigm for building energy management platforms and marketed the resulting product.

EU contribution: € 6 675 000

EARTH-ABUNDANT MATERIALS TO CATALYSE GREEN ENERGY PRODUCTION?

The **CritCat project** may have killed two birds with one stone. By replacing rare metals with earth-abundant materials in catalytic reactions, its team proposes a path towards a reduced carbon footprint and cheaper production cost for the chemical industry, while at the same time increasing the viability of new energy conversion technologies.

EU contribution: € 4 369 000

GREENER AIRLINES

The **CARING project** produced an 'eco-software' SkyBreathe®, which analyses millions of flights every year and identifies best practices to save fuel using Big Data and Artificial Intelligence. Then, it provides guidance and recommended actions to help pilots perform greener flights. The project's technology has already helped save 600.000 tons of CO2.

EU contribution: € 647 000

DEVELOPING NEW WAYS TO DETECT EXOTIC PESTS EARLY

The **HOMED project** will provide a full set of science-based, innovative practical methods and tools to assess and control emerging or invasive pests and pathogens threatening EU forests, following a holistic and multi-actor approach. For instance, the researchers are developing traps for fungal spores, and DNA tools and databases of species to help identify whether a spore is local or imported.

EU contribution: € 4 999 000

HIGH-PERFORMANCE COMPUTERS WITH LOWER ENERGY CONSUMPTION

Prof. David Atienza Alonso works on new computer architectures to produce energy-efficient computer servers and data centres. Current designs require 30-40% of the energy supplied to be dissipated in cooling. In the framework of his **COMPUSAPIEN project,** he designed novel 3D computer architectures obtaining promising results that are already inspiring changes in the computer manufacturing industry.

EU contribution: € 1 999 000

ROBOT CHEMISTS AND A NEW FAST CHARGING BATTERY

As part of the **SMART-POM project**, Leroy Cronin and his team have created a robot chemist that could potentially revolutionise the way molecules are discovered, thanks to machine-learning techniques. This could lead to lower costs for synthesising new molecules for drugs and new materials and polymers for high-tech applications. They also discovered a new type of liquid battery that is ten times more energy-dense than existing models. Refuelling electric cars could be reduced to a few minutes, by literally pouring new charged electrolytes into the tank, as for petrol cars. The battery's higher energy density allows it to store more power in less liquid, making the commercial application to cars viable.

EU contribution: € 2 464 000

CULTIVATING THE INTERNET OF THINGS IN FARMING

The **IoF2020 project** paves the way towards data-driven farming that is capable of providing higher production yields in a more sustainable and environmentally-responsible fashion, while also making the European farming sector more competitive in an increasingly globalized world. The Internet of Things (IoT) has the potential to be a real game-changer in the field. To prove it, IoF 2020 are already providing solutions and facilitating the large-scale uptake of IoT at dozens of pilot sites around 5 trials (crops, vegetables, fruits, meat and dairy) & 19 use cases.

EU contribution: € 29 999 000

MORE INFORMATION ON HOW
Research and Innovation contributes to AI policy

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