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Sustainable oceans research powered by winning Artificial Intelligence (AI) solutions in Capgemini competition

Winning solutions from internal competition at Capgemini, sponsored by AWS, use artificial intelligence to capture research insights and support sustainable ocean development initiatives at Norway's LoVe Ocean Observatory

PARIS, November 3, 2021— Capgemini has developed new artificial intelligence (AI) models that contribute to the understanding and modelling of the earth's climate, providing new insights into seasonal patterns of the ocean ecosystem using undersea sensor data. The solutions were developed by the two winning teams of Capgemini's Global Data Science Challenge (GDSC); a group-wide annual competition where employees use AI to address real world challenges. Participants used Amazon Web Services (AWS) machine learning (ML) to analyze over 100 terabytes of sensor data on ocean temperatures and currents, provided by the Lofoten-Vesterålen (LoVe) Ocean Observatory in Norway, helping the observatory extract valuable research insights to support their conservation initiatives.

The LoVe Ocean Observatory is a national research center in Norway which tracks real-time data on the biological and chemical environment of the ocean, thereby contributing to ocean conservation efforts. Situated in an ecological and geological hotspot off the Norwegian coastline, the LoVe Ocean Observatory uses a network of undersea sensors to monitor the impact of human activity, pollution, and marine life such as migration patterns and changes to ocean temperature, salinity, pH, and CO2 caused by climate change.

Building a climate-positive future, together

The Observatory has collected vast amounts of data over the past decade, sharing these insights with the Institute of Marine Research and the United Nations (UN) in support of its Decade of Ocean Science for Sustainable Development program. However, as the volume of data created by the observatory expands, it becomes more difficult for researchers to manually analyze it, and to identify relevant insights for research purposes. Capgemini employees therefore stepped in to address this challenge.

Nearly 1,200 employees from 33 different countries participated in its Global Data Science Challenge this year, developing their skills to build impactful solutions, and experiencing first-hand the complexities of gaining insights from data.

The winning teams built an ML algorithm capable of processing data in real-time. They provided LoVe researchers with the ability to monitor and analyze data under extreme circumstances, identify how patterns of bio-marine migration interact with various features of undersea life, and measure increasing numbers of dynamic characteristics in marine ecosystems. By combining different datasets, they also helped uncover tidal features and weather pattern impacts that hadn't been recognized previously. These new insights could then be leveraged to support more sustainable ocean development.

Sissel Rogne, CEO at the Institute of Marine Research, stated: "*The LoVe Ocean observatory is our eyes and ears in this important marine ecosystem. And, data analytics and AI play a vital role in facilitating more efficient research into the great challenges of sustainability in marine life. During this Decade of Ocean*

Science, we are delighted that data from the observatory has been used in this innovative project with Capgemini, helping us capture insights from the continuous data streams."

Zhiwei Jiang, CEO of the Insights & Data Global Business Line at Capgemini said: *"Sharing data on our planet is crucial for sustainable living. As a leader in AI and data, we have an obligation to provide the tools and opportunities to fight climate change. Working closely with the LoVe Ocean Observatory and AWS means that, together, we can make a meaningful and measurable impact. We have a community of talent that brings the skills, energy, and insights needed to address society's biggest challenges through technology. We know that the positive impact of these projects are felt for years to come, creating tangible benefits that shape the future we want for our people, our society, and our planet."*

Mike Miller, Director, AI Devices at Amazon Web Services (AWS), commented*: "It's a privilege to work with our Partners on innovative projects which are having a positive impact on our planet. This long-standing collaboration between Capgemini and AWS is further proof of the power of AI in supporting the natural world and those who strive to protect it, and we look forward to seeing how the LoVe Ocean Observatory builds on these initial successes."*

Using data and AI for continued research on climate action

Capgemini will continue to work with the LoVe Ocean Observatory on a voluntary basis to support the testing and deployment of its methods on LoVe's servers to gather new insights. The long-term aim is to make data significantly more accessible for users and researchers, allowing them to identify features that weren't previously visible, and to highlight the important and integrated work of the observatory and other research centers around the world.

Alongside the work, which is tied to the UN's Decade of Ocean Science for Sustainable Development, the aim of this year's challenge is to ensure further development and open access to data and insights across all aspects of ocean science. To know more about the Global Data Science Challenge, click here.

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