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Author: Mr. Marc Herrera
Space Studies Institute of Catalonia (IEEC) & Polytechnic University of Catalonia (UPC), Spain

ANALYSIS AND DEFINITION OF AI4EO IN CATALONIA: POLICIES, ECOSYSTEM AND FUTURE

Abstract

Nowadays, Earth Observation (EO) is a growing domain employed in many environmental, societal and economic applications, both for the private and public sectors. Plenty of companies are emerging across various regions intending to harness this type of information to provide support and actionable information in diverse domains such as climate change or emergency management. In addition, governments are also increasingly relying on EO data for different decision-making and subsequently, this information may determine policies, laws and regulations. These governments do not only rely on private companies to obtain and conduct different studies and to provide society with the information and the management they require, but they are also investing in their own technology to be self-sufficient and control their infrastructure and data whenever they may require it. Furthermore, the rapid increase in interest and possibilities of Artificial Intelligence (AI) and more specifically Machine Learning (ML) and Deep Learning (DL) have provided a novel framework to exploit EO data with these technologies. Catalonia, has always and historically positioned itself as an innovative region committed to pioneering technological advancements. From the Industrial Revolution in the early 20th century to contemporary pursuits in the Space and Artificial Intelligence (AI) sectors. Facilitated by governmental initiatives and collaborations with local institutions, such as the Space Studies Institute of Catalonia (IEEC), substantial investments and resources have been allocated to foster research and development in the realm of Artificial Intelligence technologies applied to Remote Sensing data (AI4EO). This study offers a comprehensive overview of the AI4EO ecosystem in Catalonia, encompassing (i) key stakeholders within both the public and private domains, (ii) ongoing and contemplated use cases and applications of artificial intelligence in the EO sector from the monitoring and classification of the soil and agriculture sector to the population evolution and urban areas development. Finally, (iii) an exhaustive SWOT analysis delineating the inherent strengths, weaknesses, opportunities, and threats associated with Catalonia's engagement in AI4EO, and the actions employed to overcome and improve them. By elucidating the current state of affairs in the AI4EO landscape, this work aims to contribute to a nuanced understanding of Catalonia's strategic positioning in the convergence of AI and EO technologies and position its region in the field of EO and the possibilities associated with combining AI.