Geospatial Artificial Intelligence: Challenges and Opportunities for the Global South

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Artificial Intelligence (AI) could be defined as a framework that includes diverse techniques of machine learning and deep learning. With the marked development of the data science of AI in the last years, and the increasing integration of geospatial technologies in the everyday life, society is acquiring new modes of experiencing and production of (spatial) knowledge. In this emerging era of AI, Geography is a discipline that can be linked with computer science and geographic information science (Kovacs-Györi et al. 2020) to shape interdisciplinary fields perspectives for the understanding of territory. Spatial analyses involve issues of scale, heterogeneity and dependence, issues that can be included in learning algorithms (Nikparvar and Thill 2021) and space is an important dimension in data science, in the sense that around 80% of data has a geographical dimension (Kopczewska K. 2022). However, in data science there are structural social problems such as racism, patriarchy, colonialism, or classism (D'Ignazio and Klein 2020). These structural problems can be linked to spatial injustices and spatial inequalities. Furthermore, there are lack of studies using machine learning for spatial analyses in topics related to the Global South, social justice, or circular economy (Casali, Aydin and Comes 2022). In this line, the AI incorporating and using spatial data (Geospatial Artificial Intelligence, GeoAI) has several challenges and opportunities, from the perspective of the residents of the Global South. These challenges and opportunities can be diverse and numerous. However, I argue that there are some urgent issues. Challenges are related to transparency of parameters and hyperparameters used in machine learning models, privacy concerns individuals´ locations, and interpretability and applicability of models to tackle inequalities in several dimensions. There are also opportunities of GeoAI for the Global South, for instance, the creation of more horizontal forms of territorial planning and facilitation of other ways of democratic participation through the use and analyses of social media data and Volunteered Geographic Information (VGI), and the development of models incorporating qualitative data such as citizens´ perceptions, feelings, and emotions, which facilitates a more pluralistic understanding of cities and territories in general. Discussing the implications of GeoAI in the Global South is primordial for taking strategical decisions to construct more cohesive societies and livable environments, and to guarantee more inclusive and integral planification of territories.

References

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