



Data-driven early-warning and rapid-response for disasters

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Abstract

Natural hazards become into high-impact human disasters when there is not a proper humanitarian and human response. Moreover, global change changes how livelihoods evolve and work and affect internal and international migrations. The humanitarian system and humans require computational tools to react and anticipate to large-scale social phenomena and drive to positive impact. By taking early actions and predicting dynamics between populations and global change including climate change, livelihoods are protected minimizing the socio-economic impact at mid and long term. In emergencies and forcibly displaced population phenomena, humans and land become a highly timely system that can be improved by Data and Artificial Intelligence. Not only earth observation systems can be deployed, but a comprehensive societal sensing system can be built for early warning and rapid assessment and response. By integrating remote sensing with small data sensors and big data sources, we can exploit Artificial Intelligence not only to trigger humanitarian action, but to compute estimated social, economic, human, infrastructure and land dynamics including impact assessments. Multi-indicator systems can be leveraged for humanitarian actors but also to create human protection based on Collective Intelligence beyond current systems based on social networks. This implies designing methods where AI and humans interact in real-time for better awareness and more automated-systemic decision making. Eventually, land and livelihoods can be better protected with seasonal and event-based indicators to minimize large scale socio-economic impact and increment short-term and long-term resilience world-wide.

Keywords: Hazards; Resilience; Early Warning; Impact Assessment, Rapid Response; Disaster; Collective Intelligence; Climate, Livelihoods

Biography

David Pastor-Escuredo is a Ph.D. from UPM in Artificial Intelligence and Complex Systems. He was a data-driven sustainability pioneer of several United Nations agencies (UNGP, WFP, UNHCR) in AI and Data for SDGs. Currently he works for UNICEF. He leads Digital Innovation projects and Collective Intelligence managing partnerships in UCL and with MIT research centers and labs. He is also a member of the Ethics and Digital Revolution group of Climate-KIC European Mission for neutral cities. He works in Data and AI for Healthcare within the program Catalyst Europe EIT Health / MIT and was awarded by EIT Health as best Catalyst Europe'20 project and Rising Star. He owns LifeD Lab where he implements cutting edge innovation for a better future within these initiatives.