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Author: Ms. Sagarika Rao Valluri
Space Generation Advisory Council (SGAC), India

Mr. Swarnajyoti Mukherjee
Apogeo Space Srl, Italy

Mr. Krittanon Sirorattanakul
California Institute of Technology, United States

HUMAN IMPACT RESEARCH: A DEEP LEARNING PIPELINE SINGULARLY DEVELOPED FOR
SPATIAL DATA FOCUSED ON SOCIAL SENSING AND PUBLIC POLICY ADVANCEMENT**Abstract**

Social reform and human upliftment is central to a developing economy's growth framework. In the process of generating social policy it is imperative to substantiate said framework with tangible data points. The growing need to support public policy research is at the forefront of social development in growing economies. Using satellite imagery will enable researchers and policy enforcers to access information that cannot be retrieved from traditional sources.

Satellite data is influential in everyday life, prompting scientists to use multiple research tools to understand the interaction between human activities and the environment. Human Impact Research (HIR) is a correlated mapping of all social reform research that directly impacts human lives, hence becoming a central aspect of public policy development. Specifically, it covers - poverty, economic welfare, human rights and subsequent infringement - modern slavery, war crimes, illegal deforestation, humanitarian mapping, forced migration and climate change induced human death, and health welfare.

HIR is supported by both traditional methods of data aggregation (surveys, interviews, historical information etc.) and remote sensing data. The traditional data collections help identify key social problems that require policy change, whereas spatial data processing aids the identification of key environmental factors that influence socio-economic issues. Through HIR we aim to mitigate human rights infringement and empower human development through data-driven evidence. To address these issues, the paper proposes a computationally driven data generation and prediction model that gives insights into HIR. The research also recognises social variations across regions and region-centric data adaptation. An attempt is made to also automate the process of data collection by introducing rudimentary Deep Machine Learning (DL/ML) to study non-space data and then predict correlated HIR trends (e.g. lands with low agricultural fertility result in rural poverty, leading to land abandonment, mass migration, and low urbanization).

The ML algorithms are designed to singularly study and investigate social factors using satellite data and identify social inflexion points rather than using standard models whose by-product is also applied to socio-economic reform. This research also proposes to enhance current social reforms in the form of - HIR that is driven by minimum-bias data sets and fast learning algorithms. We aim to achieve three key aspects of HIR, poverty analysis through data that delivers predictive insights for the next 5 years, human rights infringements across politically and, culturally unstable geographies and migratory analysis to improve integration into society and resettlement activities.