

Applying Automated Change Detection in the Update and Maintenance of Geospatial Data at the Census Bureau

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The Geography Division of the Census Bureau has developed an automated change detection process using Artificial Intelligence and Machine Learning (AI/ML) to perform updates and maintenance to the Master Address File/Topologically Integrated Geographic Encoding and Referencing (MAF/TIGER) System. Using Sentinel-2 satellite imagery and Google Earth Engine, data scientists can apply large-scale cloud compute with open-source python scripts to multiple vintages of moderate resolution imagery to identify areas of new construction. Once these areas are identified, staff use machine learning to perform object extraction to capture the building footprint for new structures. These building footprints will enhance the accuracy of incoming addresses data, as well the existing address locations, and will serve as a reference for all spatial updates in the MAF/TIGER System. In addition, the use of automated change detection methods and AI/ML creates operational efficiencies for geographers by focusing attention on areas in which change has occurred and updates are needed and new geospatial data may need to be acquired.

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