BIOSENSE INSTITUTE

Published patent at the international level (M93); System and method for intelligent soil sampling

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A system and method for intelligent soil sampling has for a novelty robotic system that samples soil based on the generation of sampling points through advanced artificial intelligence algorithms.

The robotic system comprises a robotic platform with sampling modules, which communicates with a server, that consists a localization module containing artificial intelligence algorithms based on satellite images from multiple spectral channels and/or images from high-resolution drone for a given parcel, generates zones and determines the coordinates of points as the best representatives of the zones to take place efficiently and quickly sampling the land. Intelligent sampling takes place through several steps where the sampling limits are defined, so a mask is placed on a given plot, after which a pixel matrix with vegetation indices is formed, which is then normalized and K-mean algorithm in different spatial resolutions is worked on with calculation of probability that each pixel belongs to one of the K zones, taking into account its environment with a different number of pixels, where each pixel is associated with changes in spatial resolutions , diagonally , associated with new values of affiliation probabilities and finally in step a consensus is reached where the final zones are determined and the probability of affiliation of pixels to zones is estimated based on local histograms of matrix entities.