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Single Parameter Segmentation Of Images

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Background

Image segmentation is one of the most critical tasks towards image analysis and interpretation. The main purpose of the image segmentation is to divide the image into segments/parts where the pixels of each segment belong to the same object.

A team of researchers from the University of Calgary's Department of Geomatics Engineering led by Dr. Naser El-Sheimy has developed a novel image segmentation algorithm that offers a scheme where many similarity measures can be used interchangeably or collaboratively. It also requires a single easy-to-tune parameter that is based on the minimum expected segment. The proposed approach can be employed on multiple data layers despite the different sources, representations, and specifications of these data layers. It also allows the relative weighting between these layers to represent the relevance of each data layer in the segmentation process.

This approach requires only a single parameter which is determined by the user to comply with user's analysis application and therefore avoiding the trial and error fashion of parameter tuning and minimizes the needed manual effort.

Area of Application

- Object Based Analysis of multiple image layers including but not limited to:
 - Satellite Imagery
 - Aerial Imagery
 - Medical Imagery
 - LiDAR Data
 - Hyperspectral Imagery

Competitive Advantages

- This algorithm avoids the tedious human effort needed by users to tune the required parameters and requires a single easy-to-tune parameter that is based on the minimum expected segment.
- The algorithm is not restricted to regular imagery and can be applied on multiple data layers.
- The algorithm is not restricted to a specific similarity measure and can adopt new measures transparently.

TECHNOLOGY



Stage of Development

- This algorithm has been tested and assessed against human segmented data set and has demonstrated a very close matching score to the human segmentation score.
- Software UI ready with full capability of supervised classification using state of art algorithms and also unsupervised/clustering functionality.

Intellectual Property Status

- Patent Pending