Topic: General Interest GIS

Introduction to Deep Learning for Raster Analysis with ArcGIS Pro

Deep learning is an emerging topic that has gained considerable attention due to its significant implications in numerous technology-related fields, including Geographic Information Systems (GIS). In this study, we explore methods for employing deep learning techniques for raster analysis, utilizing tools provided by ESRI's ArcGIS Pro software.

We commence with a concise introduction to deep learning, exploring the fundamentals of neural networks and gradually building our understanding through concepts such as loss function minimization and convolutions. Acquiring knowledge of these principles will equip us with the necessary foundation to efficiently use the deep learning tools available in ArcGIS Pro.

Subsequently, we present a workflow for deep learning based pixel classification of aerial imagery acquired with our Harris H6 Hybrid UAV. This includes a discussion on data preparation, choosing the appropriate deep learning model, training the model, and deploying the model to analyze data post-training. During this conversation, we will also shed light on the limitations and optimization aspects to be considered when operating deep learning systems.

In conclusion, deep learning serves as an exceptional tool that can automate numerous processes typically encountered by GIS users. We are confident that, with a methodical approach, any GIS user can seamlessly integrate deep learning into their workflows.

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