



## AI4LUC METHOD: PIXEL-BASED CLASSIFICATION OF LAND USE AND LAND COVER BASED ON A LARGE DATASET OF SATELLITE IMAGES

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**Resumo.** The Cerrado Biome is known mainly for the biodiversity of fauna and flora, as well as for its agricultural potential. Its varied landscapes of land cover and use are studied in order to understand social, economic and environmental aspects. Thus, the Remote Sensing community has used satellite images with high spatial resolution to monitor and map these activities. In view of the volume of satellite images needed to cover the extent of the biome, Deep Learning techniques are adequate and important to process them, due to generalization capability of machine learning. Indeed, to label a type of vegetation, the context and the dynamics must be considered. Therefore, this dissertation proposal consists of developing a method to classify the types of use and coverage in the Cerrado, at the pixel level, using Convolutional Neural Networks of Deep Learning. Called LUCai, term attributed to the definition of Land Use and Land Cover in the Cerrado by the Deep Learning method, is constituted especially in the integration of two deep networks, the first to classify images by its context, while the second, pixel by pixel; the region of interest corresponds to approximately 44% of the total extension of the Cerrado, whose data correspond to the images produced by the WPM camera of the CBERS-4A satellite, in the period of February of 2020 to February 2022. Wherefore, the networks will be applied to the voluminous dataset of multispectral images with high spatial resolution. The evaluation of the performance of the models will be given by the metrics Accuracy and F1-Score, and by comparison to other methods presented in the literature.