Image Analysis for Part Recognition Based on Pixel Formation and Coloration

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Satellite and aerial imagery are tools that offer a wide range of applications in diverse fields, from ecosystem analysis to road navigation and from industrial evaluation to disaster relief. However, since these images are in a pixel base system, commonly known as raster, its analysis becomes complex and time consuming, generating an increase in expenditure and a delay in the decision making process, because it requires human analysis and intervention to generate meaningful results from these images. Those disadvantages become unattainable on emergency situations, such as tornado relief or hurricane evacuation, or in time sensitive applications, where every delay could mean the project's failure. This project offers a computational method to automate image part recognition, in which different components of the photograph are identified by the color of each pixel in the image in relation to its neighboring pixels. After implementing this computer program; the results are very encouraging, providing an effective analysis tool that, in a short amount of time, is capable of generating outputs that identify different parts of an image, such as roads, constructions, perimeters of agricultural plots, urban lots and ecological landscape. This provides the user with a fast, easy, economical and effective tool to analyze an aerial and satellite photograph that can be used in an ever growing scope of human activities.

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