Chapter 5
PATCH.AI:
Forest Cover Virtualization on Digital Maps Using Satellite Imagery (Google Maps API)

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ABSTRACT

In a situation where the severe threats of down environmental challenges are prevalent, there is no doubt that there has never been a time when innovative tools for the forest ecosystems monitoring and management are relevant. PATCH.AI stands out as a pioneering technology that enables the integration of satellite imagery and AI algorithms to execute a through coverage status survey of forests. PATCH.AI provides analytical solutions based on the state-of-the-art Google Maps API. This technology makes use of high-definition satellite photographs that allow for the precise visualization and analysis of the given area. The core functions of PATCH.AI are in getting accurate details on areas that are forested or not through the artificial intelligence technology. Through the use of the latest in image processing technology, the system automatically recognizes and colors any forest regions in green, and thereafter, the background is plainly white, indicating the absence of forest.

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INTRODUCTION

In an age when ecological sustainability is the vital ingredient, one can count the time of PATCH.AI as the momentous step ahead in ecological monitoring and management. Mueller, J. P. (2006) This innovative app utilizes the Google Maps API extensively and it enables the collection of satellite images that have enough detail and a broader field of view. Using the advanced field of image processing, PATCH.AI expands and increases its capacity to collect and analyze data from forest coverage across diverse landscapes.

One of the main components of the technology used by PATCH.AI is its highly evolved algorithmic infrastructure. This network of computations closely studies satellite images and separates green forested areas from those that are not. Through the code coloring of the forests in vibrant green and contrasting them against the barren lands in stark white, PATCH.AI provides a clear and immediate visual with the green forests and the white barren land. This is really helpful in the identification of forested area in an ease manner and makes a very strong visual communication tool for the condition of the earth forest cover.

The fact that it is PATCH.AI's system real-time functionality is also extended to the quantification of the green vegetation coverage. It figures out percentage of the screen displayed that is covered with forest and thereby gives users an instant and accurate estimate of forest density. This function can be particularly helpful for people with a vary of interests ranging from environmentalists, land managers, and researchers who need detailed data as their basis to form decisions on time.

PATCH.AI is a shining example of such constantly growing technology in the world of environmental technology. By integrating pivotal satellite imagery with the most advanced image processing technique, it becomes a unique device for the monitoring and management of forest ecosystems. Its user-friendly interface and almost real-time analysis capabilities makes it an indispensable tool for those who care about the well-being of our natural assets and make studies about them as well.

PROBLEM STATEMENT AND MOTIVATION

Global forest cover reduced at the quickest rate is one of the major environmental problems of the modern era. Forests have several functions that are vital for the ecosystem as they help preserve biodiversity and they also act as carbon sinks reducing climate change. Nevertheless, forestry clearing, and forest decline remain to be a problem since urbanization, agriculture, logging, and other anthropogenic activities

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