

Identification of different types of lithologies based on the intensity values registered in point clouds that were obtained using a mobile laser scanner

New technologies have been used recently in the mining industry. One of them are LiDAR scanners, a technology that allows you to get point clouds from objects or surfaces that are around it. Point clouds have information attached to each one, like the XYZ coordinates and other values depending on the scanner. One of those values are the intensity values, that are just the returning light pulse that the scanner registers when the pulse bounces a surface. It's related to the color of the surface, so if its darker it will get a value closer to 0, while light surfaces will get higher values. In any underground mine, identification of the types of lithologies in the tunnel is always important to obtain a better ground control. Depending on the amount of people assigned to this task, it can take a lot of time to identify these lithologies. With this new methodology, a single person could walk around the mine using the mobile scanner, obtaining the point clouds at the end. Finally, by processing the data, and knowing the interval of values of each lithology, the user would be able to identify the lithologies that are present in the tunnel. The present work will try to reach a statistic and reliable interval of values for some rocks like sandstone, shale, and coal, since samples of these are available in the laboratory and are common in coal mines.