

## Abstract

This paper explains about identifying wood types using a macroscopic image on wood surfaces which have specific characteristics, such as cross-section, radial, and tangential. Generally, on the identification process of wood types, traders and carpenters only do the checking which focuses on the cross-section part, it happened because of the difficulty of identifying the radial and the tangential wood surfaces. By using the convolutional neural network method, it can extract images with several layers, so that it is possible to do an identification process on all three wood surfaces. There are approximately 3,000 images which consist of 3 species of wood with each cross-section, radial and tangential surfaces. Identification results showed great potential even though there was a small amount of misclassification caused by similarities in different species and differences in similar species. Within the process, classification results obtained by the amount training accuracy 89% and testing accuracy 96% for the cross-section, 79% for the radial and 88% for the tangential planes. Thus, the identification of wood surfaces with high accuracy result was at the cross-section surface.

**Keywords:** Macroscopic, Image, Convolutional Neural Network, CrossSection, Radial, Tangential.