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POLLIMAC II: A Modular Automated Pollen Image Classifier

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ABSTRACT – In the Philippines, identification of plant resources utilized by bees has been done mainly by manual classification using taxonomic keys and comparison with reference slides. This practice is quite tedious specially on a large number of data. Digital techniques for imaging pollen have simplified the identification process but still required time and skill. Automation of the digitized pollen can solve the need for a faster and accurate identification system. This provides better knowledge for the management of local flora and eventually the conservation and survivorship of bees. We present POLLIMAC II, an improved version of an automated pollen image classification system that uses artificial neural networks and digital image analysis. Previous version of the system could not automatically process raw images captured as inputs and provided only a limited set of classifiers. POLLIMAC II, on the other hand, has a modular framework composed of three parts namely: the input module; the feature extraction module that extracts image features; and the ANN module, which takes the features to train and learn to classify the input pollen images.

Keywords: palynology, pollen image classification, artificial neural networks

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