「Automated identification of Lauraceae by scale-invariant feature transform」

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Thank you for giving me an opportunity to introduce our research. It was my great honor to receive the Japan Wood Research Society paper award. I am Sung-Wook Hwang, currently a JSPS fellow at Kyoto University. I received a Ph.D. in wood science and technology at Kyungpook National University, Daegu, South Korea in February 2016 and have been studying at Kyoto University since November 2016.

The paper was the starting point of our long journey to understand the computer vision (CV) from the perspective of a wood scientist. Through the scale-invariant feature transform (SIFT), which is widely accepted as standard feature extraction technique, we tried to introduce CV technology in the field of wood anatomy. 1557 micrographs from wood samples of 11 genera including 39 species of the Lauraceae, collected from the RISH Xylarium, Kyoto University, were prepared as an image dataset. The SIFT algorithm not only correctly classified the Lauraceae with its remarkable performance, but the clustering analysis of the SIFT descriptors informed us anatomical features as well: CV recognized selectively the cell corners, cell lumina, vessels, and axial and ray parenchyma cells. The result implies that we may interpret computer vision based on domain knowledge of wood anatomy.

At the moment, we are trying to reduce the gap between human and computer vision, as well as the gap between conventional anatomy and informatics. We sincerely hope that our study will be a small but a steady step to make full use of CV in the field of wood science. Once again, on behalf of collaborators I sincerely thank JWRS and the people involved.

March, 2019
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