Resource Summary Report

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Plant leaf tooth feature extraction

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Proper Citation

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Protocol Information

URL: https://dx.doi.org/10.17504/protocols.io.wrxfd7n

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Summary: Previous studies extract features that are not strictly defined in botany; therefore, a uniform standard to compare the accuracies of various feature extraction methods cannot be used. For efficient and automatic retrieval of plant leaves from a leaf database, in this study, we propose an image-based description and measurement of leaf teeth by referring to the leaf structure classification system in botany. First, image preprocessing is carried out to obtain a binary map of plant leaves. Then, corner detection based on the curvature scale-space (CSS) algorithm is used to extract the inflection point from the edges; next, the leaf tooth apex is extracted by screening the convex points; then, according to the definition of the leaf structure, the characteristics of the leaf teeth are described and measured in terms of number of orders of teeth, tooth spacing, number of teeth, sinus shape, and tooth shape.

Associated Publications: Wang H, Tian D, Li C, Tian Y, Zhou H (2019) Plant leaf tooth feature extraction. PLoS ONE 14(2): e0204714. doi: 10.1371/journal.pone.0204714

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