

Can humans be replaced by computers in taxa recognition?

Monday, August 14, 2017 2:00 PM (30 minutes)

Biomonitoring of waterbodies is vital as the number of anthropogenic stressors on aquatic ecosystems keeps growing. However, the continuous decrease in funding makes it impossible to meet monitoring goals or sustain traditional manual sample processing. We review what kind of statistical tools can be used to enhance the cost efficiency of biomonitoring: We explore automated identification of freshwater macroinvertebrates which are used as one indicator group in biomonitoring of aquatic ecosystems. We present the first classification results of a new imaging system producing multiple images per specimen. Moreover, these results are compared with the results of human experts. On a data set of 29 taxonomical groups, automated classification produces a higher average accuracy than human experts.

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