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| Title | A multi-plant disease diagnosis method using convolutional neural network | | |
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| Abstract |  |
| Diagnosing the plant disease is crucial from the perspective of agriculture, as diseases often limit plants’ production capacity. However, manual approaches to recognize plant diseases are often temporal, challenging, and time-consuming. Therefore, computerized recognition of plant diseases is highly desired in the field of agricultural automation. Due to the recent improvement of computer vision, identifying diseases using leaf images of a particular plant has already been introduced. Nevertheless, most of the introduced models can only diagnose diseases of a specific plant. Hence, in this chapter, we investigate an optimal plant disease identification model combining the diagnosis of multiple plants. Despite relying on multi-class classification, the model inherits a multi-label classification method to identify the plant and the type of disease in parallel. For the experiment and evaluation, we have collected data from various online sources that included leaf images of six plants, including tomato, potato, rice, corn, grape, and apple. In our investigation, we implement numerous popular convolutional neural network (CNN) architectures. The experimental results validate that the Xception as well as DenseNet architectures perform better in multi-label plant disease classification tasks. Besides, we have found that a CNN architecture, the skip connections, spatial convolutions, and shorter hidden layer connectivity influence on better results in plant disease classification. | |