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AntibiogramJ: a Tool for Analysing Images from Disk Diffusion Tests

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Abstract

Background and objectives. Disk diffusion testing, known as *antibiogram*, is widely applied in microbiology to determine the antimicrobial susceptibility of microorganisms. The measurement of the diameter of the zone of growth inhibition of microorganisms around the antimicrobial disks in the antibiogram is frequently performed manually by specialists using a ruler. This is a time-consuming and error-prone task that might be simplified using automated or semi-automated inhibition zone readers. However, most readers are usually expensive instruments with embedded software that require significant changes in laboratory design and workflow.

Methods. Based on the workflow employed by specialists to determine the antimicrobial susceptibility of microorganisms, we have designed a software tool that, from images of disk diffusion tests, semi-automatises the process. Standard computer vision techniques are employed to achieve such an automatisation.

Results. We present AntibiogramJ, a user-friendly and open-source software tool to semi-automatically determine, measure and categorise inhibition zones of images from disk diffusion tests. AntibiogramJ is implemented in Java and deals with images captured with any device that incorporates a camera, including digital cameras and mobile phones. The fully automatic procedure of AntibiogramJ for measuring inhibition zones achieves an over-

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