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(57) Abstract :
The present invention relates to an automatic device designed for detecting tear ferning patterns to diagnose dry eye conditions. It features a housing with a glass slab holder specifically adapted to hold a microscope slide containing a tear fluid sample. An adjustable lighting module ensures consistent illumination of the sample. The device includes a microscope unit with an automatic focusing module for magnifying the tear ferning patterns and a high-resolution imaging unit to capture images of these patterns. To enhance diagnostic accuracy, an image processor analyzes the captured images using pattern recognition, classifying the tear ferning patterns into predefined grades. A display unit presents the images and analysis results, providing an interactive user interface for clinicians. Additionally, a data logging unit stores images, analysis results, and diagnostic history, while a power supply unit powers the device. A USB unit facilitates data transfer between the device and external devices, enhancing its clinical usability.

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