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Paper Title:	A Cost-Effective Digital Microfluidic System for CRISPR Diagnostic Automation
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Abstract

CRISPR diagnostics offer precise detection of genetic material with high specificity and accuracy while adaptable for field deployment. However, the labor-intensive steps required can reduce usability and increase the risk of human error. To overcome these limitations, we developed a low-cost digital microfluidic (DMF) platform integrated with a custom fluorescence imaging module for the automation of CRISPR diagnostics. Our DMF platform was built from a basic PCB array coated with a layer of parafilm and silicone oil. The fluorescence module was custom designed and fabricated through 3D printing. Our integrated platform effectively facilitated movement, mixing, and fluorescence imaging of water and CRISPR-Cas reagents. This affordable DMF system demonstrates its initial feasibility for automating CRISPR diagnostics, enhancing accessibility and user-friendliness.
